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Company/organisation SAGEM	**Team** WP 22	**MORANE** **WP/ACTIV:** WP22

FFFIS

for

GSM-R SIM Cards

ERTMS/GSM-R Document O-2418

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	NAME	DATE	VISA
Author	SAGEM	15.02.2000	
Reviewed	Giovanni Porpora	01.02.2003	
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EVOLUTION SHEET

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1. REFERENCE

1.1. Documentation

[1] EIRENE, System Requirement Specification, version 13.0 of 15/12/00
[2] EIRENE, Functional Requirements Specification, version 5.0 of 20/12/00
[3] GSM11.11 version 8.1.0
[4] 3GPP 23.040 version 3.4.0
[5] MORANE, FFFS for confirmation of high priority calls, F 10 T 6002 3
[6] MORANE, FIS for confirmation of high priority calls, F 12 T 6002 3
[7] MORANE, FFFS for functional addressing, E 10 T6001 3
[8] MORANE, FFFIS for shunting mode, I 13/2 T 7001 2
[9] spare[10] 3GPP 27.007 version 3.4.0
[11] MORANE, ”FFFS for Presentation of Functional Numbers”, F10 T 6003 3

1.2. Abbreviation / Acronyms

A3	Authentication algorithm ; Used for authenticating the subscriber
A8	Cipher algorithm ; Used for enciphering/deciphering data
ASCI	Advanced Speech Calls Items
AC	Access Conditions
ADN	Abbreviated Dialling Number
BCCH	Broadcast Control Channel
CBMI	Cell Broadcast Message Identifier
CHV	Card Holder Verification information
COMP128	Name of standard A3/A8 MoU algorithm
DF	Directory File
EF	Elementary Files
EMLPP	enhanced Multi-Level Pre-emption and Priority
EMS	EIRENE Mobile Station
FDN	Fixed Dialling Number
FN	Functional Number
GID	Group call Identifier
GSM	Global System for Mobile communications
GSM-R	Global System for Railway Mobile communications
GSM-R MS	GSM-R Mobile Station
GSM-R PLMN	GSM-R Public Land Mobile Network
HPLMN	Home PLMN
IC	International Code
ICCID	Integrated Circuit(s) Card Identification
IMSI	International Mobile Subscriber Identity
MF	Master File
MMI	Man Machine Interface
MS	Mobile Station
MSISDN	Mobile Station International ISDN Number
PIN	Personal Identification Number
PLMN	Public Lands Mobile Network
SIM	Subscriber Identity Module

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SMS	Short Message Service
SMSCB	Short Message Service Cell Broadcast
SMS-SC	Short Message Service - Service Centre
SMS/PP	Short Message Service/Point-to-Point
VBS	Voice Broadcast Service
VGCS	Voice Group Call Service

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2. GENERAL

The aim of this document is the specification of GSM-R SIM cards that fulfil EIRENE requirements.

The EIRENE requirements are described in documents [1] and [2].

The specified GSM-R SIM card is inserted in GSM-R mobile stations.

A mandatory requirement is that the GSM-R SIM card has to be GSM compliant. The GSM-R specific data are stored in a way, that these GSM-R SIM cards could also be used inside of public mobiles without effect on the normal operation of standard GSM mobile phones.

This document presents :

- in chapter 2, a brief overview about SIM card, as introduction to SIM card topics,
- in chapter 3, the data storage requirements, to define minimum configuration required for GSM-R SIM card
- in chapter 4, the data stored on the SIM, to identify mandatory files and their structures,
- in chapter A an informational section concerning possibilities to improve the SIM card management
- in chapter B, examples of managing Numbering Plan and a GSM-R SIM card personalisation

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3. SIM CARD OVERVIEW

The aim of this chapter is to provide general information concerning SIM cards.

The purpose of the SIM card in GSM is to personalise the mobile with subscription data.

The first generations of SIM cards (phase 1 and phase 2) did only store information without further processing. Those information are stored in so called Elementary Files (EF), organised in a tree structure on the SIM. The data stored on the SIM are relevant for :

- the GSM operator : basic GSM data for subscription and security, additional facilities following operator's usage.
  - the subscriber : currently mainly used for phone books and short messages.

The phase 2+ generation of SIM cards offer new functionality. In addition to the functionality of the previous SIM card generations, the phase 2+ SIM card is able to initiate actions.

This new functionality is called « SIM tool kit ».

GSM phase 2+ ASCI functionality needs new specific files in the SIM card. These new file definitions are part of a new generation phase2+ SIM card release.

Information in the SIM card could be accessed by :

- the network,
- the user through the MMI,
- AT commands

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AT commands are able :

- to access directly to most of EF by commands defined in the standard GSM,
- to access to EF through the address of the EF in the SIM card (in this case, the EF has to be managed as a linear set of bytes: it is the restricted SIM access +CRSM command, see document [10]).

The following figure illustrates the use and environment of GSM-R SIM cards.

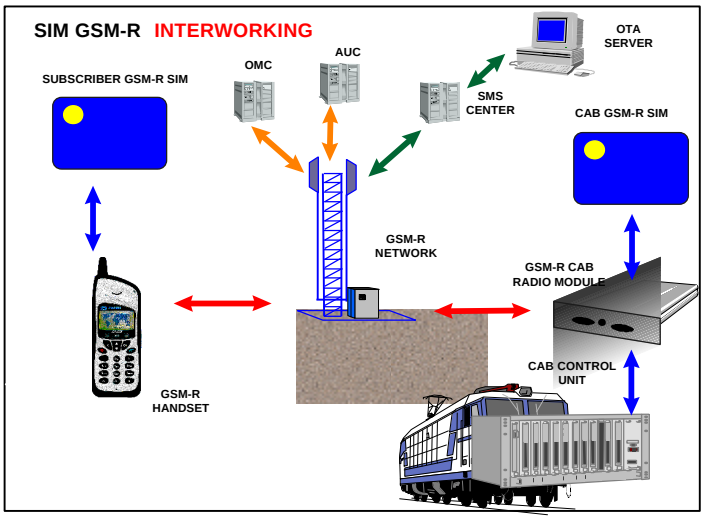

Figure 1: SIM GSM-R interworking

4. SIM CARD REQUIREMENTS FOR DATA STORAGE

This chapter presents data storage requirements for GSM-R SIM cards. The contents of the GSM-R SIM card is studied in the next chapter.

EIRENE requires to support the ASCI features VBS, VGCS and eMLPP. As ASCI features are part of GSM phase 2+ specification, the GSM-R SIM cards shall be compliant to phase2+ SIM standard.

The GSM-R SIM card memory shall have a minimum of 16Kbytes. This capacity is deduced from the GSM-R SIM card mapping simulation, as calculated in appendix B[1]. This capacity may be increased following the needs of the railway operators for additional information (national implementations). For information: 32 Kbytes SIM cards are available and 64 Kbytes cards will be launched soon.

4.1. Hardware constraints

The GSM-R SIM card life cycle requirement is minimum of 10 years. But currently, the maximum SIM card life cycle is 5 years. This situation is due to current technology for read/write cycle of the SIM card.

[1] This capacity seems to be the strict minimum. A capacity of 32K provides national implementation solution.

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5. DATA ON THE GSM-R SIM CARD

This chapter defines mandatory fileds on the GSM-R SIM card.

There are 3 classes of mandatory files on the GSM-R SIM card :

1. Common mandatory GSM files, which have to be on the SIM due to the fact that GSM-R is based on GSM. (see document [3]).
2. Optional GSM files which became mandatory for a GSM-R SIM card: the purpose of this document is to identify those EFs and to define their use within the GSM-R environment. The definition and the structure of those files are done in the standard (see document [3]).
3. Specific EIRENE files. Those EF have to be defined to support GSM-R requirements. They are new to GSM and this document defines the structure and the usage of these files.

Following figure illustrate distinction between exiting GSM directory file and EIRENE directory file :

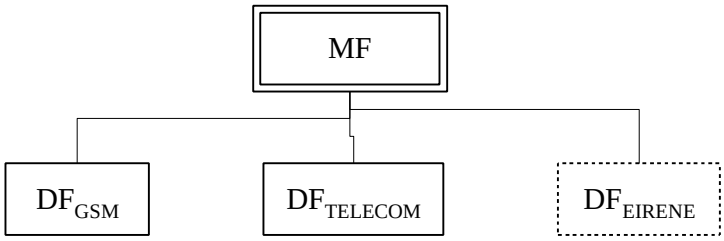

Figure 2: Structure of EF system

5.1. Mandatory GSM EF

This paragraph provides the list of common GSM mandatory files that are mandatory for GSM-R SIM cards.

The reference document [3] contains a complete description.

The directory MF, (address ‘3F00’) which contains :

File name	Identifier	Type	Contents
EF CHV	0000		CHV information
EF ICCID	2FE2	transparent	ICC Identification

The directory GSM, (address ‘7F20’) which contains :

File name	Identifier	Type	Contents
EF LP	6F05	transparent	Language Preference
EF IMSI	6F07	transparent	IMSI
EF KC	6F20	transparent	Ciphering Key Kc
EF PLMNsel	6F30	transparent	PLMN selector
EF HPLMN	6F31	transparent	HPLMN search period
EF SST	6F38	transparent	SIM service table
EF BCCH	6F74	transparent	Broadcast control channel
EF ACC	6F78	transparent	Access control class
EF FPLMN	6F7B	transparent	Forbidden PLMN
EF LOCI	6F7E	transparent	Location information[2]
EF AD	6FAD	transparent	Administrative data
EF PHASE	6FAE	transparent	Phase identification

In addition, the complete directory TELECOM, (address ‘7F10’), is mandatory.

5.2. Optional GSM EF required for GSM-R

For GSM-R SIM cards some GSM EFs that are optional for GSM shall be mandatory for GSM-R in order to fulfil EIRENE requirements.

The purpose of this chapter is to identify those EFs, to justify why they are mandatory for GSM-R and how they shall be used in GSM-R.

The definition and the structure is done in the GSM-standard (see document [3]) . However in this document, the minimum sizing of these files is defined .

File name	Identifier	Type	Contents
CBMI	6F45	Transparent	CB messages identifier
VGCS	6FB1	Transparent	Voice group call Service
VGCSS	6FB2	Transparent	Voice group call Service Status
VBS	6FB3	Transparent	Voice broadcast Call Service
VBSS	6FB4	Transparent	Voice broadcast Call Service Status
EMLPP	6FB5	Transparent	Enhanced MLPP
AAAEM	6FB6	Transparent	Automatic answering for eMLPP service

[2] Location Information contains : Temporary Mobile Subscriber Identity (TMSI), Location Area Information (LAI), TMSI TIME and Location update status

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File name	Identifier	Type	Contents
ADN	6F3A	Linear Fixed	Abbreviated dialling numbers
SMS	6F3C	Linear Fixed	Short messages
SMSS	6F43	Transparent	Short messages status
MSISDN	6F40	Linear Fixed	MSISDN
SDN	6F49	Linear Fixed	Short dialled numbers

5.2.1. $EF_{PLMNsel}$, PLMN selector

EIRENE requires to select other Operators in case of roaming. Networks shall be listed by the list of authorised networks in the following order:

1. ”foreign” railway networks,
2. public networks with EIRENE facilities,
3. public networks without EIRENE facilities.

The standard GSM specification allows only a list of preferred PLMNs without further classification. This is not fulfilling the railway needs.

Due to the fact that a distinction between the three groups could not be performed using the $EF_{PLMNsel}$ field this specification defines a EIRENE specific file ($EF_{GsmrPLMN}$). See chapter GSM-R network selection $EF_{GsmrPLMN}$. The GSM file EF PLMNsel shall not be used, excepted for the Home PLMN.

5.2.2. EF_{CBMI}, Cell broadcast message identifier selection

EIRENE requires to support SMS-CB messages.

This EF contains message identifier parameters of the type of cell broadcast messages to accept.

Sizing of the GSM-R takes into consideration a maximum amount of 10 CB message identifier records.

Structure description and access rights are described in document [3]. This EF is included in the DF_{GSM}.

5.2.3. EF_{VGCS} and EF_{VGCSS} VGCS service

EIRENE requires to support VGCS.

The EF for VGCS contains the subscribed GIDs of group calls and the status of each group call.

group ID VGCS	= 50 x 4 bytes
VGCS status	= 7 bytes

50 records of GID values are required. It is the maximum allowed by ETSI specification. The size of VGCS Status file is fixed.

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The EF_{VGCS} file shall contain all VGCS GIDs, including train emergency and shunting GIDs (common, emergency and dedicated shunting GID).

Structure description and access rights are described in document [3]. This EF is included in the DF_{GSM}.

The UPDATE right of the status field (ADM) shall be set by the operator to CHV1 to allow the user to activate or deactivate any Group ID. Any access restrictions to specific GIDs are provided by application reading EIRENE specific EFs.

5.2.4. EF_{VBS} and EF_{VBSS} VBS service

EIRENE requires to support VBS.

The EF contains the subscribed GID of broadcast calls and the status of each broadcast call.

group ID VBS	= 50 x 4 bytes
VBS status	= 7 bytes

50 records of GID values are required. It is the maximum allowed by ETSI specification. The size of VBS Status file is fixed.

Structure description and access rights are described in document [3]. This EF is included in the DF_{GSM}.

The UPDATE right of the status field (ADM) shall be set by the operator to CHV1 to allow the user to activate or deactivate any Group ID. Any access restrictions to specific GIDs are provided by application reading GSM-R specific EFs.

5.2.5. EF_{EMLPP} and EF_{AAAEM} eMLPP service

EIRENE requires to support eMLPP.

This EF contains the data for priority levels subscription, the Fast call set-up conditions and the automatic answering.

Structure description and access rights are described in document [3]. This EF is included in the DF_{GSM}.

5.2.6. EF_{ADN}, Abbreviated Dialling Numbers

EIRENE requires to store a list of addresses. This field should be used to store numbers entered by each user.

This EF should be used to store numbers entered by each user.

numbers	= 100 numbers x 14 bytes
names	= 100 names x 14 characters

Structure description and access rights are described in document [3]. This EF is included in the $DF_{TELECOM}$.

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Note : there is a limit for this field of maximum 241 records.

5.2.7. EF_{SMS} and EF_{SMSS}, Short Messages

EIRENE requires to support SMS services.

Those fields contain the short message information.

Structure description and access right are described in document [3]. This EF is included in the $DF_{TELECOM}$.

5.2.8. EF_{MSISDN}, MS ISDN for speech, data and voice

EIRENE requires to store MSISDN used.

This EF contains the MSISDN used for speech, data and fax.

Structure description and access rights are described in document [3]. This EF is included in the $DF_{TELECOM}$.

Note :

- This file has to be set individually for each SIM card. No pre-set value is possible.
- MORANE doesn't support multi-numbering

5.2.9. Last Number Dialled

EIRENE requires to support a set of Last Number Dialled. The SIM card files EF_{LDN} can support this list.

However, the last dialled number could be stored directly in the mobile, and not in the SIM card.

5.2.10. EF_{SDN}, Service Dialling Numbers

EIRENE requires to support a direct access to following numbers. These numbers are mainly directly associated to a MMI function (e.g. cab radio priority access).

The use of this file in GSM-R environment is to store short codes.

services numbers	= 10 x 14 bytes
services names	= 10 x 3 characters

The "Services numbers" field contains fixed dialling numbers and/or supplementary service control strings (SSC). The service name shall be a 3 characters string.

Also VGCS and VBS tele-services (including priority) could be initiated using this conception.

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10 records of SDN values are recommended by MORANE.

The contents of this files shall be :

Record Number	Service names	Service description	For e.g. : invoke values
1	ETE	(train) emergency call	*SC[3]*<priority[4]>#<GID[5]>
2	ESE	(shunting) emergency call	*SC*<priority>#<GID>
3	PPC	Primary train controller	*<priority>#<short codes>
4	PSC	Secondary train Controller	*<priority>#<short codes>
5	PEC	Electrical power supply controller	*<priority>#<short codes>
6	RBC	Radio Block Centre	*<priority>#<short codes>
7	PDA	Other drivers in area	*SC*<priority>#<GID>
8	PSE	Security	*<priority>#<short codes>
9	PCO	Conductor	*<priority>#<short codes>
10	PCA	Catering Staff	*<priority>#<short codes>

Structure description and access rights are described in document [3]. This EF is included in the $DF_{TELECOM}$.

[3] SC is Service Code described in GSM 02.30
[4] coded on 3 digits as described in GSM02.30
[5] as defined in the document [1]

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5.3. EIREINE EF

EIRENE has specific requirements not covered by the standard GSM phase 2+. Due to these requirements following EIRENE specific files are defined.

The purpose of this paragraph is to specify these files and to define their structure.

File name	Identifier
EF FN	6FF1
EF CallconfC	6FF2
EF CallconfI	6FF3
EF Shunting	6FF4
EF GsmrPLMN	6FF5
EF NW	6F80
EF 5to8digits	6F81
EF 2digits	6F82
EF 8digits	6F83
EF 9digits	6F84
EF SSSSS	6F85
EF LLLLL	6F86
EF FreeNumber	6F87
EF FC	6F88
EF Service	6F89
EF Call	6F8A
EF FctTeam	6F8B
EF Gateway	6F8C
EF IC	6F8D
EF CT	6F8E
EF SC	6F8F
EF predefSC	6F90
EF Location	6F91
EF Controller	6F92

Remarks :

Following rule applies to all BCD coded values in this chapter:

- Digit 1 of a BCD coded value shall be the most significant digit.
- In this chapter, some values are strings. The alphabet used by those strings shall follow CCITT Recommendation T.50: "International Alphabet No. 5". (ISO 646: 1983, "Information processing - ISO 7-bits coded characters set for information interchange".) The alphabet is also known as SMS default 7-bit coded alphabet.

5.3.1. EIRENE directory file DF_{EIRENE}

The EIRENE EF is not part of the GSM standard. They shall be included into a dedicated Directory.

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EIRENE specific data shall be stored into the new directory $DF_{EIREINE}$. This DF_{EIRENE} is situated at the root of the GSM-R SIM card file system. The advantages are :

- GSM-R SIM cards could be used in a standard GSM MS, without any corruption of specific EIRENE information,
- consequence is that only GSM-R mobiles are able to manage information in this DF.

The identifier of DF_{EIRENE} shall be : **'7FE0'**.

The directory DF_{EIRENE} is mandatory for all GSM-R SIM cards. All following files described in this chapter shall be included in DF_{EIRENE}.

5.3.2. Functional Numbers EF_{FN}

GSM-R MS shall store Functional Numbers on the SIM card that have been previously registered successfully in the GSM-R network (see document [7]). Regarding the requirements an EIRENE cab radio MS can be considered as "worst case". Requirements for this MS will be used in this chapter to define the maximum size needed for storage of FNs.

The EF_{FN} will support the Functional Numbers storage facility.

The sizing requirement is to have for a MS a maximum of

- 3 running numbers and
- 1 engine number (or coach number)
- 1 FN for shunting mode.

at one and the same time. In addition, there is a maximum of 20 Function Codes per functional running number and functional engine/coach number.

This leads to a maximum value of 81 = (20*(3+1)+1) functional numbers.

Additionally, Functional Numbers stored in the SIM card have to be split into 2 types :

- Permanent Functional Number : the engine number or the coach number
- Temporary Functional Number : the other Functional Numbers

The permanent FN can be de-registered only by action of maintenance staff.

The temporary FN can be de-registered in addition to user action by the application program when one of the following events occurs.

- MS is switched off
- Invalid functional number after interrogation
- External de-registration of FN (for e.g. forced FN de-registration).

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This information has to be associated with the storage of the FN in the SIM card.

The EF_{FN} file supports the current functional address of the GSM-R MS. The structure of EF_{FN} is :

Identifier: '6FF1'	Structure: linear fixed	Mandatory
file length: 9*n bytes (n<=80)	Update activity: high	

Access Conditions:

READ	CHV1
UPDATE	CHV1
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1 to 8	Functional Number and type	M	8 bytes
9	List Number	M	1 byte
:	:	:	:
9*(n-1)+1 to 9*(n-1)+8	Functional Number and type	O	8 bytes
9*n	List Number	O	1 byte

The field "Functional Number and type" contains the FN. The file size is up to 15 digits, coded in BCD. The FN shall be stored in the format defined in [11]. The structure of this field is :

B8	B7	B6	B5	B4	B3	B2	B1	
Digit 2				Digit 1				Byte 1
Digit 4				Digit 3				Byte 2
Digit 6				Digit 5				Byte 3
Digit 8				Digit 7				Byte 4
digit 10				Digit 9				Byte 5
digit 12				Digit 11				Byte 6
digit 14				Digit 13				Byte 7
0/1	0/1	Spare		Digit 15				Byte 8

The value 'F' is used for an empty digit.

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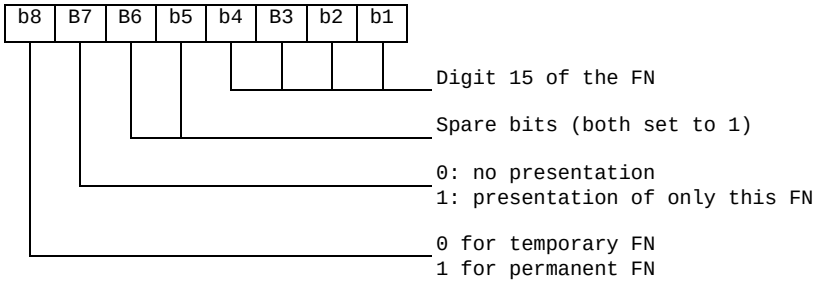
The last byte of the field has the following meaning :



The field ”List number” contains the serial number of the FN. The field is coded in binary. The empty value is ‘0’. This field is managed automatically by the MS to sort FN registration. Following rules have to be applied :

- When the first FN is registered, then the serial number is ‘1’.
- When the MS is switched on, then the serial number is the maximum value stored in the set of the field ”List number”.
- When a FN is registered, the serial number is automatically incremented by the MS application. The increment is ‘1’. Then the serial number grows always until raise value ‘255’.
- When a FN is de-registered, the serial number is temporary ”lost”. The field ”List number” is set to the empty value ‘0’.
- When this serial number reach this top value ‘255’, then the list of serial numbers could be discontinuously order. Then the list of serial number is rearranged from 1 to the amount of registered FN (up to 80) and all fields ‘List number’ are updated. The application is in charge to update the value in all the ‘List number’ fields.

The default value when there is no functional number stored in the Sim-Card is:

‘FF FF FF FF FF FF FF FF 00’.

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5.3.3. Call Confirmation of emergency calls

EIRENE requires to confirm the receipt of railways emergency calls.. This function implies to store :

- General configuration for call confirmation
    - PL_CONF, the priority level of call confirmation,
    - CONF_NR, the phone number of the Acknowledgement Centre,
    - MAX_RAND, the maximum value (in sec) of a random range of confirmation call,
    - N_ACK_MAX, the number of confirmation trials until a success,
    - PL_ACK, Priority level over which a confirmation is needed,
    - N_NESTED_MAX, the maximum number of pending confirmation calls (currently 10).
    - Train Emergency GID, the reference to the standard table of VGCS GID
    - the shunting emergency GID, one of the GID subscribed in the $EF_{VGCS,}$
    - MS IMEI, the value of the IMEI of the MS to avoid any Call Confirmation from any other MS.
- A set of following structure. Each structure is dedicated to one call and contains :
    - T_DUR_s, the duration of the call to confirm,
    - T_RELCALC, the time stamp to calculate T_REL,
    - PL_CALL, the priority level of the received call,
    - CAUSE, the cause of the end of call,
    - GCR, the Group Call Reference of the call,
    - FNR, the Functional Number of the MS when the call is received,

The general confirmation parameters could be configured by the railway Operator to optimise the network load. The user access right to update those parameters has to be restricted through application (MS).

The set of structures to confirm a call shall be updated by the application itself. Other rights are needed and defined in the following table.

The $EF_{CallConfC}$ and $EF_{CallConfI}$ will support the Call Confirmation storage facilities.

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5.3.3.1. Call Confirmation Configuration $EF_{CallConfc}$:

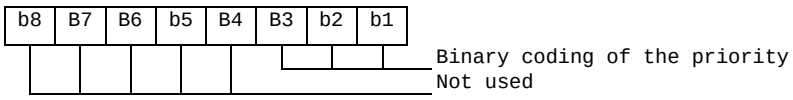
Identifier: '6FF2'	Structure: transparent	Mandatory
file length: 24 bytes	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	CHV1
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	PL_CONF	M	1 byte
2-9	CONF_NR	M	8 bytes
10	MAX_RAND	M	1 byte
11-12	N_ACK_MAX	M	2 bytes
13	PL_ACK	M	1 byte
14	N_NESTED_MAX	M	1 byte
15	Train Emergency GID	M	1 byte
16	Shunting Emergency GID	M	1 byte
17-24	IMEI	M	8 bytes

The field ”PL_CONF” contains the configuration of the priority of the call confirmation :



The binary coding of the priorities are :

0	No priority
1	Priority 4
2	Priority 3
3	Priority 2
4	Priority 1
5	Priority 0

The values set for priority in EF_{EMLPP} for Confirmation of high priority calls is not checked against subscription.

According E-SRS chapter 13.5.5, the priority level of a call confirmation call should be priority 3, so “PL_CONF” should be set to ’02’.

The field ”CONF_NR” contains the phone number of the call confirmation centre. This phone number is coded in BCD. It has a maximum of 16 digits. ‘F’ is an empty digit. Please refer to EIRENE numbering plan [1] for more information.

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B8	B7	B6	B5	B4	B3	B2	B1	
Digit 2				Digit 1				Byte 1
Digit 4				Digit 3				Byte 2
Digit 6				Digit 5				Byte 3
Digit 8				Digit 7				Byte 4
digit 10				Digit 9				Byte 5
digit 12				Digit 11				Byte 6
digit 14				Digit 13				Byte 7
Digit 16				Digit 15				Byte 8

The field ”MAX_RAND” contains the hexadecimal maximum value (in seconds) for the random timer used to establish the call confirmation call. The values of MAX_RAND is defined in [5].

The field ”N_ACK_MAX” contains the maximum number of trials to send confirmation. This value is coded in binary. The values are defined in [5].

The field ”PL_ACK” contains the threshold above which a confirmation is required (calls that not exceed this priority level will not be stored in the file) :

b8	B7	b6	B5	B4	b3	b2	b1	
								Binary coding of the priority
								Not used

The binary coding of the priorities are :

0	No priority
1	Priority 4
2	Priority 3
3	Priority 2
4	Priority 1
5	Priority 0
6	Priority B
7	Priority A

The values for priority within this table are independent from the subscribed priority EF_{EMLPP}.

The field ”N_NESTED_MAX” contains the maximum number of element of the $EF_{CallConfI}$. The coding is in binary. The value N_NESTED_MAX shall be smaller or equal to $EF_{CallConfI.}$

The field ”Train Emergency GID” contains the record number in the EF_{VGCS} of the train emergency GID. This value is coded in binary and is in the range [1, 50[6]]. This field has to be put in relation with the Train Emergency Call short code.

[6] in binary : from 1 [Hexa] to 32 [Hexa]

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The field ”Shunting Emergency GID” contains a value coded in binary. This value is in the range [1 to 50]. This is the record number in the EF_{VGCS} of the emergency shunting GID. This field has to be put in relation with the GID for shunting emergency call given in the EF_{SDN}.

The field ”IMEI” contains the IMEI of the MS. This IMEI is coded in BCD. It has a maximum of 15 digits. ‘F’ is an empty digit. This field shall be pre set by the operator with 'F' for all digits. Mobiles shall write their own IMEI into this field whenever they use the $EF_{CallConfI}$ elementary file for storing information needed for pending confirmation calls.

Note :

If the IMEI stored in the SIM card is different of the IMEI of the MS (Ref. chapt. 4.3.3), the SIM card has been moved and the Mobile may read/use information stored in the field.

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5.3.3.2. Call Confirmation Information $EF_{CallConfI}$

Identifier: '6FF3'	Structure: linear	Mandatory
file length: 21 * n bytes (n<=10)	Update activity: high	

Access Conditions:

READ	CHV1
UPDATE	CHV1
INVALIDATE	ADM
REHABILITATE	ADM

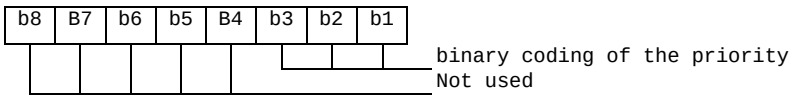
Bytes	Description	M/O	Length
1 to 3	T_DUR	M	3 bytes
4 to 7	T_RELCALC	M	4 bytes
8	PL_CALL	M	1 byte
9	CAUSE	M	1 byte
10 to 13	GCR	M	4 bytes
14 to 21	FNR	M	8 bytes
:	:	:	:
21*(n-1)+1 to 21*(n-1)+3	T_DUR	O	3 bytes
21*(n-1)+4 to 21*(n-1)+7	T_RELCALC	O	4 bytes
21*(n-1)+8	PL_CALL	O	1 byte
21*(n-1)+9	CAUSE	O	1 byte
21*(n-1)+10 to 21*(n-1)+13	GCR	O	4 bytes
21*(n-1)+14 to 21*(n-1)+21	FNR	O	8 bytes

The field ”T_DUR” contains the duration of the call (in seconds). The value is coded in binary.

The field ”T_RELCALC” contains the information needed by the MS to send to the acknowledgement centre the time between the end of the call and the sending of the confirmation.

In case the user is able to change the internal clock (the value that is used for the time stamp) the MS shall reject this attempt as long there are unconfirmed high priority calls.

The field ”PL_CALL” contains the priority of the call received :



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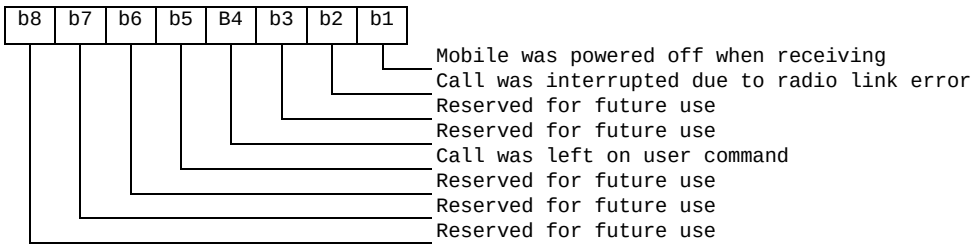
The decimal coding of the priorities are :

0	No priority
1	Priority 4
2	Priority 3
3	Priority 2
4	Priority 1
5	Priority 0
6	Priority B
7	Priority A

The field ”CAUSE” contains the value of the cause of the termination:

- ‘00’ is regular call termination
- otherwise, a bit to ‘1’ indicates an error :



The field ”GCR” contains the group call reference. This value has a maximum of 8 digits and is coded in BCD. The value ‘F’ is used for an empty digit.

B8	B7	B6	B5	B4	B3	B2	B1	
Digit 2				Digit 1				Byte 1
Digit 4				Digit 3				Byte 2
Digit 6				Digit 5				Byte 3
Digit 8				Digit 7				Byte 4

The field ”FNR” contains the default Functional Number of the MS which was set to be presented by the MS when the emergency call was received. This value has a maximum of 15 digits and is coded in BCD. The value ‘F’ is used for an empty digit. The FN shall be stored following [11].

B8	B7	B6	B5	B4	B3	B2	B1	
digit 2				Digit 1				Byte 1
digit 4				Digit 3				Byte 2
digit 6				Digit 5				Byte 3
digit 8				Digit 7				Byte 4
Digit 10				Digit 9				Byte 5
Digit 12				Digit 11				Byte 6
Digit 14				Digit 13				Byte 7
‘F’				Digit 15				Byte 8

The default value when there is no call to confirm is ‘FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF’.

5.3.4. Shunting

EIRENE requires for some types of MS the shunting functionality. In this case, GSM-R SIM card has to store information (see document [8]). Identified information to store is :

- the common shunting GID, one of the GID subscribed in the EF_{VGCS},
- the list of shunting GIDs. A shunting GID has to be a subscribed GID. The list of subscribed GID is in the EF_{VGCS}.

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A file $EF_{Shunting}$ is required for shunting to store the configuration.

Identifier: '6FF4'	Structure: transparent	Mandatory
file length: 8 bytes	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	Common GID	M	1 byte
2 to 8	Shunting GID	M	7 bytes

The field "Common GID" contains a value coded in binary. This value is in the range [1 to 50][7]. This is the record number in the EF_{VGCS} of the common shunting GID.

The field "Shunting GID" contains the indication concerning the GID subscribed in the EF_{VGCS} which are shunting GID. A bit is set to '1' if the corresponding GID in the record of EF_{VGCS} is a shunting GID. Otherwise, the bit is set to '0'.

The following table indicates for each bit of the field the record number of the EF_{VGCS}.

B8	B7	B6	B5	B4	B3	B2	B1	
8	7	6	5	4	3	2	1	Byte 1
16	15	14	13	12	11	10	9	Byte 2
24	23	22	21	20	19	18	17	Byte 3
32	31	30	29	28	27	26	25	Byte 4
40	39	38	37	36	35	34	33	Byte 5
48	47	46	45	44	43	42	41	Byte 6
Unused bits						50	49	Byte 7

This last field permits to manage the identification of the shunting GID in the EF_{VGCS} and the rights to activate or de-activate those GIDs in the EF_{VGCSS} .

Procedures and rules for shunting are described within [8]. Subscription checking for GID and priority levels are not performed by the SIM card.

5.3.5. GSM-R network selection $EF_{GsmrPLMN}$

EIRENE requires a network selection following this rules :

1. Home railway network,
2. "foreign" railway networks,
3. public networks with EIRENE facilities,
4. public networks without EIRENE facilities.

[7] in binary : from 1 [Hexa] to 32 [Hexa]

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The required priority of the networks is coded in the order of this table.

The structure of the file $EF_{GsmrPLMN}$ is :

Identifier: '6FF5'	Structure: linear fixed	Mandatory
file length: 9*n bytes < 55	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1 to 3	PLMN 1	M	3 bytes
4	Class of network 1	M	1 byte
5 to 6	IC-Incoming reference table 1	M	2 bytes
7 to 8	Outgoing reference table 1	M	2 bytes
9	IC table reference 1	M	1 byte
:	:	:	:
9*(n-1)+1 to 9*(n-1)+3	PLMN n	O	3 bytes
9*(n-1)+4	Class of network n	O	1 byte
9*(n-1)+5 to 9*(n-1)+6	IC-Incoming reference table n	O	2 bytes
9*(n-1)+7 to 9*(n-1)+8	Outgoing reference table n	O	2 bytes
9*(n-1)+9	IC table reference n	O	1 byte

The field "PLMN" contains the Mobile Country Code (MCC) followed by the Mobile Network Code (MNC). The coding of this fields is the same as described in the $EF_{PLMNsel}$ in the document [3].

Mobile Country Code (MCC) is followed by the Mobile Network Code (MNC).

Coding: according to GSM 04.08.

- If storage for fewer than the maximum possible number n is required, the excess bytes shall be set to 'FF'.

- For instance, using 246 for the MCC and 81 for the MNC and if this is the first and only PLMN, the contents reads as follows:

Bytes 1-3: '42' 'F6' '18'
Bytes 4-6: 'FF' 'FF' 'FF'
etc.

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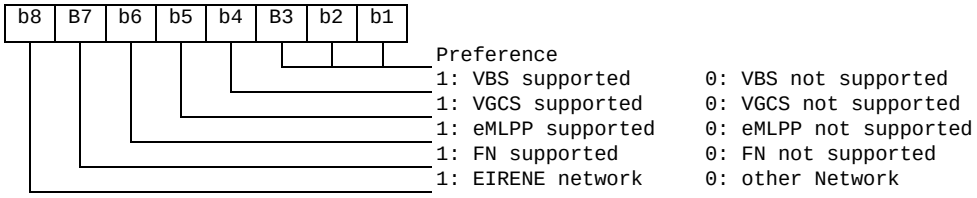
The ”Class of network” field has the following structure :



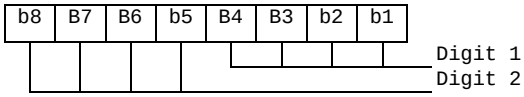
Preference is a binary value. ‘0’ is the highest priority and ‘7’ is the lowest priority. The LSB is b1 the MSB is b3.

Bits b8 to b4 indicate the facility supported by the network.

The field ”IC-Incoming reference table” is a BCD value. This field contains the address of the Elementary File in the EIRENE DF which is the root file of the numbering plan tree to analyse a Functional Numbers for incoming calls. This Elementary File is also the IC table, in other words the table which contains the value of IC. The file type of the IC table shall be ‘F3’ (see below in the Numbering Plan paragraph).

The field ”Outgoing reference table” is the address of the Elementary File in the EIRENE DF which is the root file of the Numbering Plan tree to construct an Functional Number.

The ”IC table reference” is a BCD value. It is a record number in a EIRENE SIM card file where the IC value and the reference to the network name is stored. This file shall be a mandatory file described in the paragraph of the numbering plan (see below). The reference of the IC file is in the field ”IC-Incoming reference table”.



The value ‘FFFF’ shall be used to indicate an empty table. In this case, there is no numbering plan information available for this PLMN.

Remark : the Home PLMN shall be included in the $EF_{GsmrPLMN}$ and shall be the first entry.

All the empty records shall be at the end of the EF and filled with ‘FF FF FF FF FF FF FF FF’.

5.3.6. Numbering plan

EIRENE requires to accommodate different requirements of individual railways concerning the functional numbering. The MS has to be the most independent of the numbering plan.

The storage in SIM card of numbering plan structure will give to MS a maximum flexibility in numbering arrangements.

The definition of the numbering plan on the SIM shall not interfere with standard GSM requirements on European Emergency Call Number (112).

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5.3.6.1. Introduction

The GSM Numbering Plan defines the structure of the phone numbers. Typically, this Plan is supported by the network, specially by the switch (Local Exchange, National Exchange or International Exchange). Each subscriber has an easy knowledge of the dialled number to join the called party; he has to know the number and the prefix for local area, for STD (National Subscribers Trunk Dialling) and ISD (International Subscribers Dialling).

The EIRENE Numbering Plan provides a more complete phone number structure in order to answer to professional needs. It is then no more possible to ask the subscriber to keep in mind the structure of this Numbering Plan. It is the reason why the subscriber needs a support to dial numbers in accordance with the numbering plan structure.

For this purpose, the best way should be to store a complete application in the SIM card in order to build a phone number in accordance with EIRENE requirements. The terminal could be fully independent of the numbering plan chosen of the Operator.

The implementation shall be :

- to store the ”building principles” of the structure of the numbering plan in the MS, that is to say the running application,
- and to store all the elements and values of the numbering plan needed to build this structure in the SIM card,

in order to provide a maximum flexibility and independence in regards of the values (numeric or terms used) and in regards of national choices.

5.3.6.2. Brief numbering plan analysis

An analysis of the numbering plan retain those principles for any EIRENE number :

1. The first digit (the Call Type) defines the type of the call.
2. Based on this value, the subscriber has to construct a number with a grouping of :

    - either several digits to dial (the train number, the coach number, the engine number, the shunting team number, mobile subscriber number, a PSTN access number)
    - either to select predefine numbers corresponding to an identify function (a Function Code (FC), a Internationl Code (IC), a specific value corresponding to a specific usage).

EIRENE numbers could be different for incoming and outgoing calls : the number can start or not with the IC.

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5.3.6.3. SIM card Elementary Files structure

The SIM card shall contain structure information of the Numbering Plan. This structure will be stored in different files, organised like a tree, expected that some sub-trees could be common.

This paragraph identifies the 4 different file structures used to build up the tree.

5.3.6.4. Introduction of the table types

1. Tables of switching values

This type of table provides the relevant information to decide which branch of the decision table to select for the given dialled number.

The table for switching values consists of a number of records. Each record shall have a length of 6 octets with the following structure :

- 1 octet — Next table type indicator :
  This octet defines the type of the next table or indicates to the application program that the end of the decision tree is reached.
- 2 octets — Next table pointer :
  These octets refer to the next Elementary File of the decision tree.
- 2 octets — Decision Value :
  This octets define the number of digits (1 to 3) that are relevant to read from the dialled/matched number string for a switching decision. The switching decision will define the selected branch of the decision tree.
- 1 octet — String Table Index :
  A binary reference to an alphanumerical string which defines the meaning of the call type. This string is displayed to the user to indicate the selected choice. These strings shall be stored in the mobile equipment (not on the SIM) and are displayed in the language corresponding to the user selection.

2. Tables of predefined values

This type of table is used wherever a combination of digits have a predefined meaning. E.g. 01 equals ”leading driver”. Note that the table refers only to a certain string. The string itself is not stored on the SIM.

The table of predefined values consists of a number of records. The record length is defined to be 3 octets with the following structure:

The first record of the table serves as a header and is structures as follows.

- 1 octet — Next table type indicator :
  This octet define the type of the next table or indicates to the application program that the end of the decision tree is reached.
- 2 octets — Next table pointer :
  These octets refer to the next Elementary File of the decision tree.

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All following records of the table contain the predefined values and the string pointers.

- 2 octets — Pre-defined value :
  Value of the pre-defined pattern of digits.
- 1 octet — String table Index :
  A binary reference to an alphanumerical string which defines the meaning of the call type. This string is displayed to the user to indicate the selected choice. These strings shall be stored in the mobile equipment (not on the SIM) and are displayed in the language corresponding to the user selection.

The file size for n predefined values is (3 + (3*n)) octets of information.

3. Tables of dialled values

Although this file type is defined as ”transparent” (not linear fixed) the structure of the first three bytes is the same as the one of the first record of the other table types.

The first three bytes of the table serves as a header and is structured as follows.

- 1 octet — Next table type indicator :
  This octet define the type of the next table or indicates to the application program that the end of the decision tree is reached.
- 2 octets — Next table pointer :
  These octets refer to the next Elementary File of the decision tree.

The fourth byte of the table contains the number of digits to be evaluated.

- 1 octet — Dialled Digit :
  This octet contains the max and min. number of digits to be evaluated.

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4. Tables of IC values

This type of table provides relevant information to decide which branch of the decision table to select for the given number.

The table for IC values consists of a number of records. Each record length is defined to be 7 octets with the following structure:

- 1 octet — Next table type indicator :
  This octet defines the type of the next table or indicates to the application program that the end of the decision tree is reached.
- 2 octets — Next table pointer :
  These octets refer to the next Elementary File of the decision tree.
- 2 octets — IC Value :
  This octets define the number of digits (1 to 4) that are relevant to read from the dialled/matched number string for a switching decision. The switching decision will define the selected branch of the decision tree.
- 2 octets — Network String Table Index :
  A binary reference to an alphanumerical string which identifies the network name. This string is displayed to the user to indicate the network name. These strings shall be stored on the SIM (EF_{NW}).

5.3.6.5. Definition of structure types

1. Switching table structure

The definition of the structure used for decision e.g. EF_{CT} is as follows:

Identifier: ----	Structure: linear fixed	Mandatory
Record length: 6n bytes (n<=10)	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	Next Table Type	M	1 byte
2 to 3	Identifier of the next table	M	2 bytes
4 to 5	Decision value 1	M	2 bytes
6	String table Index 1	M	1 byte
:	:	:	:
6*(n-1)+1	Next Table Type	O	1 byte
6*(n-1)+2 to 6*(n-1)+3	Identifier of the next table	O	2 bytes
6*(n-1)+4 to 6*(n-1)+5	Decision value n	O	2 bytes
6*(n-1)+6	String table Index n	O	1 byte

The field ”Next Table Type” shall contain the type of structure of the next table. It will be :

1. ‘F0’, for a ”decision” table which contains decision values.
2. ‘F1’, for a ”pre-defined values” table.
3. ‘F2’, for a ”number of dialled digits” table.

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4. ‘F3’, for the ”IC” table.
5. ‘FF’, for an empty next table. End of the decision tree.

The field ”Identifier of the next table” is the address of another Elementary File in the decision tree. These EF are contained in the subdirectory file of EIRENE DF. The value ‘FFFF’ is used for an empty next table and marks the end of the decision tree.

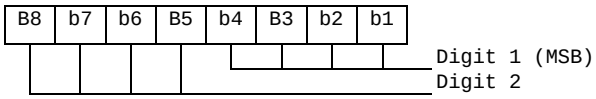
The field ”Decision value” contains 1 to 4 digits and is coded in BCD. Not relevant digits shall be coded as ‘F’. The relevant digits (not ”F”) shall be situated beginning with the MSB of the decision value field.

The amount of relevant digits is fixed for all records within one decision table. A variable amount of relevant digits is for further study.

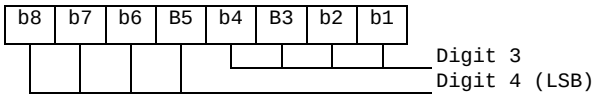
”FFFF” as a decision value is not allowed.

The coding of the ”Decision value” (2 bytes) is :

First byte :



Second byte :



The field ”String table Index” contains a value from ‘0’ to ‘254’. The value ‘255’ (‘FF’) means an nil pointer (no alphanumerical string available). The table of string is described below.

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2. Pre-defined values table structure

The definition of structure of the table of predefined values will be :

Identifier: ----	Structure: linear fixed	Optional
Record length: 3+(3*n) bytes (n<=99)	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	Next Table Type	M	1 bytes
2 to 3	Identifier of the next table	M	2 bytes
4 to 5	Predefined value 1	M	2 bytes
6	String table Index 1	M	1 bytes
:	:	:	:
3+3*(n-1)+1 to 3+3*(n-1)+2	Predefined value n	O	2 bytes
3+3*(n-1)+3	String table Index n	O	1 bytes

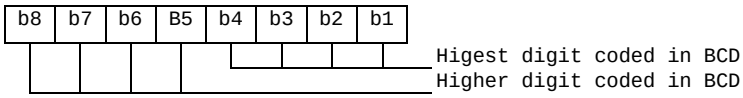
The fields ”Next Table Type” as well as the ”Identifier of the next table” follow the same format as specified for the switching table structure.

Following by a set of :

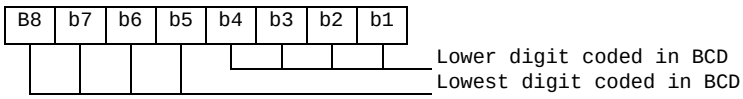
- 2 octets up to 4 digits, coded in BCD
  F for empty.
- 1 octet a decimal reference to an alphanumerically string which defines the meaning of the predefined value (will be displayed to the user to perform the choice, stored in the mobile)

The field ”Predefined value” will be :

First byte :



Second byte :



The value ‘F’ is used for an empty value.

The field ”String table Index” contains a value from ‘0’ to ‘254’. The value ‘255’ (‘FF’) shall indicate a nil pointer (no alphanumerical string available). The table of string is described below.

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3. Number of dialled digits table structure

The definition of structure of the table of dialled values will be :

Identifier: ----	Structure: transparent	Optional
Record length: 4	Update activity: low	

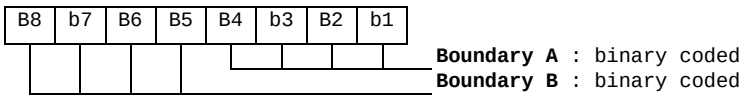
Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	Next Table Type	M	1 bytes
2-3	Identifier of the next table	M	2 bytes
4	Dialled Digits	M	1 bytes

The fields ”Next Table Type” as well as the ”Identifier of the next table” follow the same format as specified for the switching table structure.

The field ”Dialled Digits” define the boundaries of the amount of digits to be dialled. The most significant four bits represents the ‘boundary B’, binary coded. The least significant four bits represent the ‘boundary A’, coded in the same way.



Depending on the ratio of these values three combinations are of relevance.

1) A>B or A=B

Boundary A is bigger than boundary B or Boundary A equals boundary B :

In this case boundary A has the meaning of the **maximum** amount of digits to be dialled whereas boundary B has the meaning of the **minimum** amount of digits to be dialled. In the case that A and B are equal this is the value which has to be dialled exactly.

The maximum (A) identifies the amount of digits that have to be evaluated. The range of this value shall be 1 to 15.

The minimum number (B) identifies the amount of digits that are requested to start the evaluation. The range of this value shall be 1 to 15 (the value 0 is not allowed).

If both values are set to 0 all remaining digits shall be evaluated up to the maximum allowed amount of digits (28 digits).

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2) A<B

Boundary A is smaller than boundary B :

In this case boundary B defines the maximum amount of input digits entered by the user. Boundary A defines the amount of digits that have to be filled up with zeros in the case that the user entered less than value A digits. The value A=0 is not allowed.

In all three cases dialled strings not in line with the given boundaries the MMI shall inform the user with an appropriate help message (e.g. Additional input is necessary)

3) Examples

The following example may clarify this definition.

A=5, B=3 The dialled string may have at least 3 and at most 5 digits, all other inputs are rejected.

A=4, B=4 The dialled string shall have exactly 4 digits, all other values are rejected.

A=5, B=8 The minimum amount of digits required is 5 digits (A=5). The maximum allowed amount of digits is 8 (B=8). The user input has to be processed as follows :

User input		Output string
1 digit :	3	00003
2 digits :	12	00012
4 digits :	1234	01234
5 digits :	12345	12345
6 digits :	123456	123456
9 digits :	123456789	Rejected, user input exceeds value B.

4. IC table structure

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The definition of the structure used for IC table (EF_{IC}) is as follows :

Identifier: ----	Structure: linear fixed	Mandatory
Record length: 7n bytes (n<=50)	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1	Next Table Type 1	M	1 byte
2-3	Identifier of the next table 1	M	2 bytes
4-5	IC decision value 1	M	2 bytes
6-7	Network String table Index 1	M	2 bytes
:	:	:	:
7*(n-1)+1	Next Table Type n	O	1 byte
7*(n-1)+2 to 7*(n-1)+3	Identifier of the next table n	O	2 bytes
7*(n-1)+4 to 7*(n-1)+5	IC decision value n	O	2 bytes
7*(n-1)+6	Network String table Index n	O	2 bytes

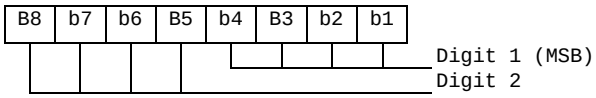
The fields ”Next Table Type” as well as the ”Identifier of the next table” follow the same format as specified for the switching table structure.

The field ”IC decision value” contains the International Code (IC), 1 to 3 digits. This field is coded in BCD. Not relevant digits are coded as ‘F’. The relevant digits (not ”F”) shall be situated beginning with the MSB of the decision value field.

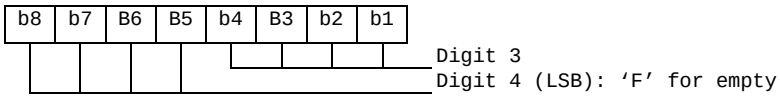
”FFFF” as a decision value is not allowed.

The coding of the ”Decision value” (2 bytes) is :

First byte :



Second byte :



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The field ”Network String Table Index” contains a value from ‘1’ up to ‘65535’. The table of Network string is stored in an EF_{NW} on the SIM. The coding of the ”Network String Table index” (2 bytes) is in binary coding with:

The first byte is the MSB,

the second byte is the LSB.

All the empty records shall be at the end of the EF and filled with ‘FF FF FF FF FF FF FF’.

5.3.6.6. Network name EF_{NW}

An Elementary File in the GSM-R SIM card shall contain the network names. This file will be referred by the IC table.

The EF_{NW} is defined in the DF_{EIRENE}.

Identifier: '6F80'	Structure: linear fixed	Mandatory
file length: 8*n bytes (n<=255)	Update activity: low	

Access Conditions:

READ	CHV1
UPDATE	ADM
INVALIDATE	ADM
REHABILITATE	ADM

Bytes	Description	M/O	Length
1 to 8	Network names 1	M	8 bytes
:	:	:	:
8*(n-1)+1 to 8*(n-1)+8	Network names n	O	8 bytes

The field ”Network names” is a string, which is the short name. The string is formatted as described in document [10] for short network representation of the command AT+COPS.

All the empty records shall be at the end of the EF and filled with ‘FF FF FF FF FF FF FF FF’.

5.3.6.7. Tables of strings for the numbering plan

For certain user inputs the MS shall display textual representation of numbers. These textual representations shall be stored outside the SIM. This chapter defines a fixed relationship between the index used by the SIM card tables (switching and predefined values table) and the location of the text string stored outside the SIM.

The length of the text string for the textual representation is not part of this specification and is implementation dependent.

Each textual description allocates one of 255 possible indices. The following table defines the meaning of each of the 255 positions. The application on the MS side is in charge to display the appropriate string taking into account the actual language selected by the user.

String index	**Description**

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String index	Description
0	Description of Call Type 0 : e.g. Public
1	Description of Call Type 1 : e.g. Short coded
2	Description of Call Type 2 : e.g. Train
3	Description of Call Type 3 : e.g. Engine
4	Description of Call Type 4 : e.g. Coach
5	Description of Call Type 5 : e.g. group and broadcast
6	Description of Call Type 6 : e.g. shunting
7	Description of Call Type 7 : e.g. Train Controller
8	Description of Call Type 8 : e.g. MSISDN
9	Description of Call Type 9 : e.g. Gateway
10	Team Leader
11	Team Member 1
12	Team Member 2
13	Team Member 3
14	For Train Driver
15	Link Assurance Transmitter
…	…
20	Other GSM-R (in case of CT 9)
21	Private railways (in case of CT 9)
30	Most appropriate primary controller (in case of CT 1)
31	Most appropriate secondary controller (in case of CT 1)
32	Power supply controller (in case of CT 1)
33	ERTMS/ETCS RBC (in case of CT 1)
34	Call confirmation centre (in case of CT 1)
…	…
40	
41	
42	Trains groups
43	Station and security staff group
44	*Reserved for national use*
45	Shunting groups
46	Track side maintenance group
47	Controller groups
…	…
50	All groups (VBS/VGCS)
51	Team number
52	Emergency call
…	…
60	Primary controller
61	Secondary controller
62	Power supply controller

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String index	Description
…	…
100	Description of Function Code 00 : Spare alarm
101	Description of Function Code 01 : Leading Driver
…	…
106	Description of Function Code 06 : FAX
107	Description of Function Code 07 : Intercom
108	Description of Function Code 08 : Public Address
109	*Reserved for international use*
110	Description of Function Code 10 : Chief Conduct.
…	…
120	Description of Function Code 20 : Catering Chief
…	…
199	Description of Function Code 99 : Reserved for national use
200	Group Call (in case of CT 5)
201	Broadcast Call (in case of CT 5)
…	…
255	Empty string

For ‘string index’ = 1 to 10 following description applies :

The field description contains the representation of the call type usage foreseen by document [1].

5.3.6.8. SIM card application Tables for the EIRENE numbering plan

This paragraph describes the application of the solution to the international EIRENE numbering plan. The proposed files could be adapted with the same structure with additional national requirements.

The purpose of the following figure is to summarise the tree of the EIRENE numbering plan :

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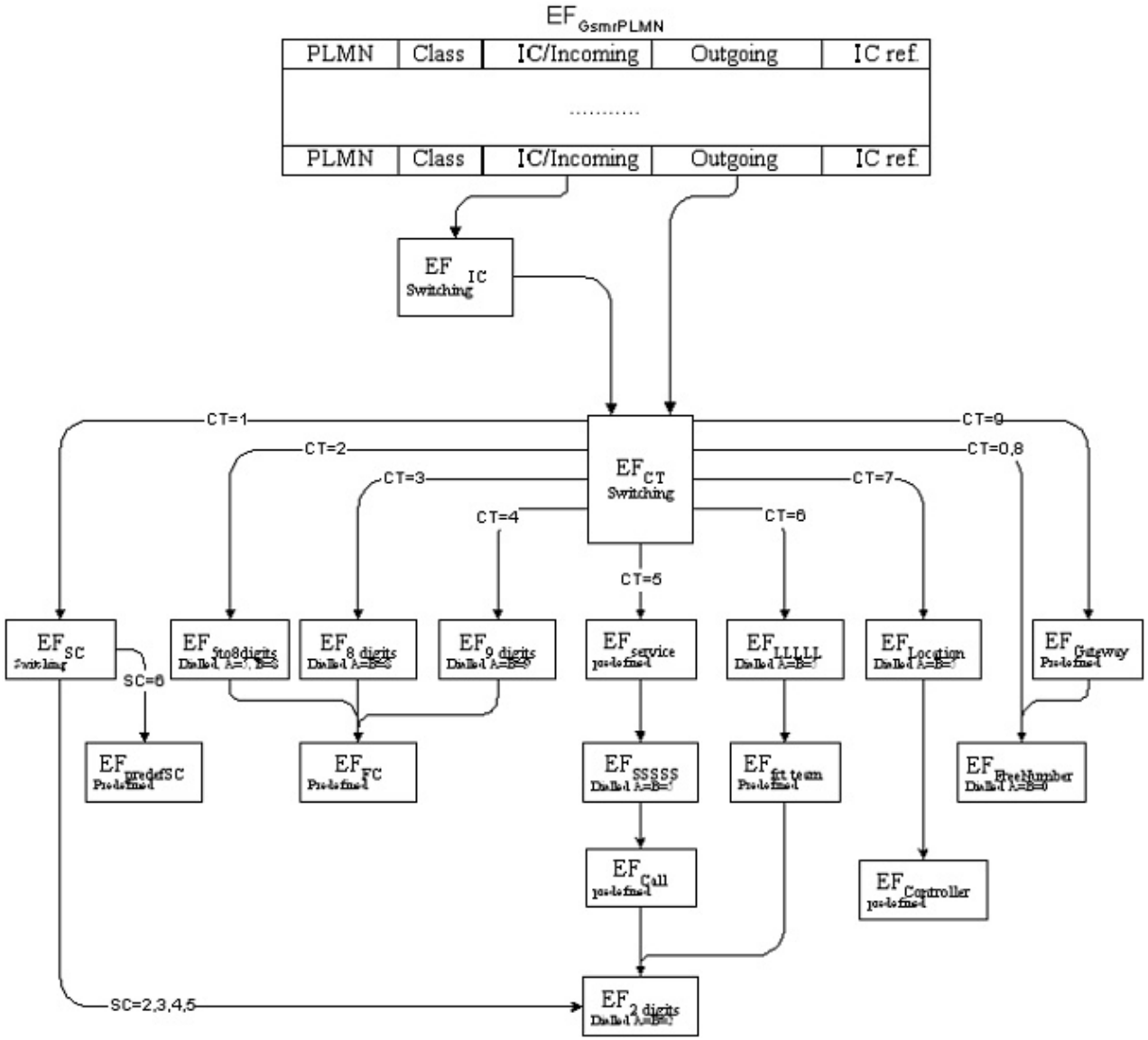
Figure 3: Numbering plan structure on SIM



For the numbering plan currently defined in EIRENE, the following **EF_{CT}** table is the root file to construct a Functional Number beginning by the Call Type :

Next table type indicator	Next table Pointer	Decision Value (CT)	String table index (towards String table on MS)
F2	<EF code>$_{\text{free number}}$	FFF0	0
F0	<EF code>$_{SC}$	FFF1	1
F2	<EF code>$_{\text{5 to 8 digits}}$	FFF2	2
F2	<EF code>$_{\text{8 digits}}$	FFF3	3
F2	<EF code>$_{\text{9 digits}}$	FFF4	4
F1	<EF code>$_{\text{Service}}$	FFF5	5
F2	<EF code>$_{LLLL}$	FFF6	6
F2	<EF code>$_{\text{Locationr}}$	FFF7	7
F2	<EF code>$_{\text{free number}}$	FFF8	8
F1	<EF code>$_{\text{Gateway}}$	FFF9	9

All the empty records shall be at the end of the EF and filled with ‘FF FF FF FF FF FF’.

For the numbering plan currently defined in EIRENE, the following **EF_{IC}** table is the root file to analyse the Functional Number beginning by the IC :

Type of next value	Reference of the next table	IC	Description
F0	<EF code>$_{CT}$	F080	Reference into EF_{NW}
F0	<EF code>$_{CT}$	F081	Reference into EF_{NW}
F0	<EF code>$_{CT}$	F082	Reference into EF_{NW}

This table is also the IC table, giving the relation between the IC value and the network name (see in description).

The following **EF_{SC}** table is the switching table used in case of Call Type 1. This table is used to select the next digit after the Call Type :

Type of next value	Reference of the next table		String Table Index
F2	<EF code>$_{\text{2 digits}}$	FFF2	30
F2	<EF code>$_{\text{2 digits}}$	FFF3	31
F2	<EF code>$_{\text{2 digits}}$	FFF4	32
F2	<EF code>$_{\text{2 digits}}$	FFF5	33
F1	<EF code>$_{\text{predefSC}}$	FFF6	34

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The **EF$_{5\ to\ 8\ digits}$** shall be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{FC}$	8	5

The **EF$_{2\ digits}$** shall be :

Type of next value	Reference of the next table	B	A
FF	FFFF	2	2

The **EF$_{8\ digits}$** shall be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{FC}$	8	8

The **EF$_{9\ digits}$** will be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{FC}$	9	9

The **EF$_{SSSSS}$** shall be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{Call}$	5	5

The **EF$_{LLLLL}$** shall be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{fct\ team}$	5	5

The **EF$_{Location}$** shall be :

Type of next value	Reference of the next table	B	A
F1	<EF code>$_{Controller}$	5	5

The **EF$_{free\ number}$** shall be :

Type of next value	Reference of the next table	B	A
FF	FFFF	0	0

The **EF$_{FC}$** shall start with:

Type of next value	Reference of the next table
FF	FFFF

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And then followed by :

FC	Description
FF01	101
FF06	106
FF07	107
FF08	108
FF10	110
FF20	120
FF61	161

Notes :

The decimal reference of a Function Code shall be the function code value + 100.

The **$EF_{Service}$** shall contain the amount of digits allowed after the ‘5’ (CT =’5’). It starts with :

Type of next value	Reference of the next table
F2	<EF code>$_{SSSSS}$

And then followed by :

Vgcs-Vbs	Description
FFF0	200
FFF1	201

The **EF_{Call}** shall contain the digit of the group type. It will start with:

Type of next value	Reference of the next table
F2	<EF code>$_{2\ digit}$

And then followed by :

group type	Description
FFF2	42
FFF3	43
FFF5	45
FFF6	46
FFF7	47

The **$EF_{fct\ team}$** shall contain the digits of the ”shunting team” (5) and the digit of the ”Team Member Function”. It will start with:

Type of next value	Reference of the next table
F2	<EF code>$_{2\ digit}$

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And then followed by :

team	Description
FF50	10
FF51	11
FF52	12
FF53	13
FF54	14
FF55	15

The **$EF_{Gateway}$** shall contain the amount of digits to access to external networks. It will start with:

Type of next value	Reference of the next table
F2	<EF code>$_{\text{free number}}$

And then followed by :

	Description
FF00	20
FF01	21

The **$EF_{predefSC}$** will contain the end code for 1612 and 1622. It will beginning by :

Type of next value	Reference of the next table
FF	FFFF

And then followed by :

	Description
FF12	42
FF22	45

The **$EF_{Controller}$** will contain the end code for the controller (Call Type 7). It will beginning by :

Type of next value	Reference of the next table
FF	FFFF

And then followed by :

	Description
FF01	60
FF02	61
FF03	62

All the EF presented in the chapter are reflecting the EIRENE requirements and shall be mandatory for GSM-R SIM cards. In addition, each railway operator is able to add specific values for his national implementation or to support any agreement with other operator.

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On the Mobile Equipment, 2 algorithms have to be implemented :

- the first to dial a Functional Number with a user-friendly interface (to register or to call).
- the second to analyse a Functional Number to display relevant information to the user

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APPENDIX A - PROPOSITION TO IMPROVE SIM CARD MANAGEMENT

Please note: Appendix A is for information only.

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1. MANAGEMENT OF SIM CARD

GSM-R SIM cards contain data for professional use.

However, some data should be updated in the live of the GSM-R MS, without the knowledge of the users (e.g.: data of the call confirmation, preferred or forbidden PLMN, …).

During normal SIM working, the standard access conditions CHV1 or CHV2 are relevant for the SIM bearer, and concern the ”classic” phonebooks and data.

Some other data like IMSI , GID1, … are protected from update by an administrative secret key. Those data are protected with a high level specially against unfortunately updates.

In the same way, all EIRENE files are protected from update by an administrative secret key.

1.1. In-place management

For in-place management or administration it is proposed to have 2 administrative secret keys:

One standard ADM2 for GSM files.

One new ADM1, relative to EIRENE files.

To facilitate the management, a **Personalization terminal** will be adequate.

Such a tool , in accordance with the customer requirements and via an ”User friendly” MMI, will perform :

Management of bearer standard files (ADN, SDN, MSISDN, SMS, SMSP, …)

Management of bearer EIRENE files (VBS, VGCS, eMLPP, FN, Shunting, Call Confirmation, …)

Management of administrative files (IMSI, SST, AD, …).

Furthermore, a graphical personalization might be realise with a specific printer and reader peripheral. It could print any thing as bearer data, special group data and even colour logo.

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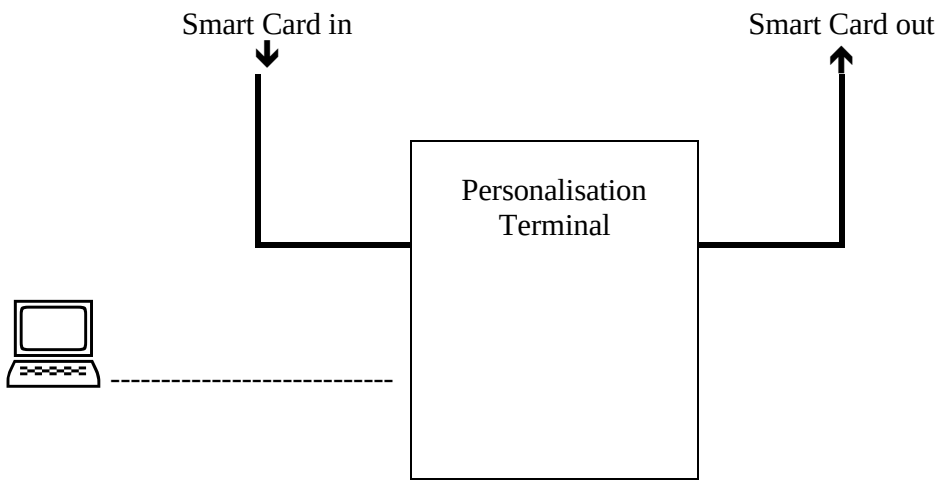

1.2. Over The Air management

The data could be managed by the network through the Over The Air (OTA) procedures, supported by phase2+ ETSI specification [4]. In such a case, the OTA application is a SIM toolkit application.

For example, the ADN update will be performed via a STKK menu activation.

For OTA management or administration it is proposed to comply with **ETSI GSM 03-48** (Security Mechanisms for SIM application Toolkit, document[4]).

A dedicated OTA secret key is used for the OTA administration and is included in the DFota/EFkey.

With that OTA support, via an OTA server, the administrator may read/update any file in the SIM with **secure transmission**.

A signature, computed by the OTA server, is enclosed with each administrative SMS.

The SIM checks this signature before executing any transmitted command.

It is proposed to use the 3DES (mode CBC) as secret key algorithm for signature and cipher option. Some parts of the administrative SMS may be ciphered (according to each country cryptology directives), with the same algorithm and a different key.

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1.3. SIM Toolkit

The SIM toolkit mechanism is an optional GSM-R feature (document [1] & [2]). The mechanisms and the use of such services is described in the ETSI standard GSM 11-14..

The SIM Toolkit mechanism is well recommended to facilitate the OTA management via menus. This operation will require to design an ”adhoc” applet with the development tools.

Such operations are ”Easy to Do” works with simple Visual Basic™ tools and Windows Powered GSM-R smart cards.

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2. SIM CARD LOCKING

The purpose of this chapter is to provide a MORANE proposal for the following problem :

In GSM the SIM card provides user information of the subscription to the system. This user is able to protect himself against pirated use by activating the PIN code. In case of a cab radio or OPH, the SIM card is associated to an engine. In the common usage for this case, the PIN code has to be public to be used by several user. In this case, the SIM card has to be protected against the theft.

In case of cab radio (EMS, EIRENE Mobile Station) or OPH terminal, it is proposed to :

- Disable CHV1 and put a tag into the SIM , at the personalization phase.
- Execute an external authentication to the SIM.

```
        OPH / EMS                                                    SIM
ASK RANDDOM
                          ----------------------------------------------
                                                  -
                                      RAND ( 8 bytes )
                          ----------------------------------------------
                                                  -
RESULT = f(RAND,Ks)
                                          RESULT
EXT. AUTHENT.             ----------------------------------------------
                                                  -
                                                                Check :
                                      SW : 90 00              RESULT=?f(RAND_KS)
                          ----------------------------------------------
                                                  -
```

The authentication is compute via a secret key algorithm f( ) : 3DES (mode ECB) should be preferred.

The secret key Ks has to be ”secured” embedded into the MRM or OPH.

Because this authentication phase is not necessary on the GPH mobile, 2 kinds of SIM cards are to be taken into account by putting a tag (not updateable) into the SIM EEPROM, at the personalization phase :

1. Tag for GPH SIM ; Standard working.
2. Tag for MRM SIM ; The authentication is required before executing any command after the SIM reset.

This tag may be included into the Ef_{info} or into a dedicated file with ”NEVER” as update AC.

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APPENDIX B – EXAMPLES

1. EXAMPLE OF READING THE NUMBERING PLAN INFORMATION

1.1. Outgoing calls

Outgoing call, MS in network not supporting EIRENE numbering plan:

Step	Action	Result
	User requires to enter a EIRENE numbering plan number. The user activates the outgoing call menu	• MS queries in table $EF_{GSMRPLMN}$ and checks properties of the current network (class of network, IC reference tables...). • Class of network indicates that the network is not supporting the EIRENE numbering plan • In table $EF_{GSMNPLMN}$ the field ”Outgoing reference table” is filled with ”FFFF”. • The MS will allow user entries like any other public MS
	The MMI will indicate to the user that the actual network is not supporting the facilities. It is up to the MMI to inform the user to use public network dialling procedures.	

Outgoing call, MS is within home network:

Step	Action	Result
	User requires to enter a number. The user activated the outgoing calls menu.	• MS queries in table $EF_{GSMRPLMN}$ and checks properties of the current network (class of network, IC reference tables...). • MS queries the address of the ”outgoing reference table” (EF_{CT}) from file GSMRPLMN. • In EF_{CT} the MS will receive information Next table type Next table address Decision values Pointer to a text string
		MS will present the (Decision values and)Text Strings on the MMI as menu items. The user shall only select one of the presented decision values.
	The user selects on of the given menu items. As example CT=2	MS will query in table EFCT the starting address ”Next table pointer” ($EF_{5to8\ digits}$)
		The MS reads in table $EF_{5to8digits}$ the value A=5, B=8. The MMI will accept all user entries shorter than 8 digits. User entries less than 5 digits will be filled up with zeros up to the fifth digit starting with the most significant digit (left side).
	Dial 5 to 8 digits	In table $EF_{5to8digits}$ the ”Next table address” points towards table EF_{FC} (type predefined value). If the user enters less than min digits (5)
	Select FC	EFFC has one entry for each possible FC

1.2. Incoming calls

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The MS is within its home country, supporting GSM-R numbering plan.

Step	Action	Result
1a	Incoming call without UUIE	• No interpretation of UUIE necessary.
	Incoming call with UUIE not following the numbering plan	• The MS will display the UUIE contents as received without an interpretation.
1b	Incoming call with UUIE	• The UUIE will consist of the IC and the functional number. • MS queries in table EFGSMRPLMN and checks properties of the current network (class of network, IC reference tables...). • MS queries the address of the ”incoming reference table” (EF_{IC}) from file GSMRPLMN. • In EF_{IC} the MS will receive information Next table type Next table address (EFCT) IC values Network String Table Index (EFNW) • It compares the field IC value with the first digits of the UUIE and displays the name of the network dedicated to the IC number. • The MS will now read the Next Table Address and read the EFCT table. From this point the processing is the same as for outgoing calls taking into account that user inputs are now the information retrieved from UUIE contents.

1.3. Network selection

The MS not registered in any network. The MS is deactivated automatic network selection:

Step	Action	Result
	Select network menu	The MS will present the table of the available networks by reading the MNC and comparing it with the entries of the GSMR supporting networks listed in $EF_{GSMRPLMN}$ file. The presentation is sorted using the information retrieved from class of network field of each network. Networks not listed in $EF_{GSMRPLMN}$ are listed at the end of the selection table on MMI.
	User selects one of the presented networks	

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2. EXAMPLE : SIM CARD PERSONALISATION

The following table present an example of GSM- SIM card personalisation construct with the present document requirements.

Note: Y for Yes and N for No.
Description table of phase 2 features :

chv1 dis	Y	ext1	N
adn	Y	ext2	N
fdn	N	sms par	N
sms	Y	ldn	N
aoc	N	cbmi	Y
ccp	N	gid1	Y
plmnsel	Y	gid2	N
msisdn	Y	spn	N

Description table of phase 2+ features :

sdn	Y	smsr	N
ext3	N	cbmir	N
vgcs	Y	bdn	N
vbs	Y	ext4	N
mlpps	Y	dck	N
aamlpp	Y	cnl	N
smscb	Y	nia	N
SoLSA	N	sume	N
nosms	N	gprs	N

Description table of SIM tool kit features :

proactive	N
menusel	N
call ctrl	N

Description of specific options :

image	N
smspp	N
dcs1800	N
SICAP	N
Transport	Y
OTA	Y
EIRENE	Y

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		TYPE	M/O	present	a-tag length	Fixed length	Rec NB	File length	EEPROM space	Read	Update	Rehab	Invalid
									16384				
Opt			Mandatory	**Y**				64	16320				
Reserved Area			Mandatory	**Y**		8		24	16296				
backup zone			Mandatory	**Y**		9	8	342	15954				
Option : Ext Auth			Optional	Y				300	15654				
Option : SICAP			Optional	N					15654				
Option : Transport			Optional	Y				100	15554				
Option : OTA			Optional	Y				4500	11054				
Option : proactive			Optional	N					11054				
File names									11054				
MF	3F00	DF	Mandatory	**Y**				46	11008				
EF KEYMAN	0011	Key	Optional	N		8	0		11008				
EF KEYOP	0001	Key	Mandatory	**Y**		8	11	157	10851	NEV	NEV	NEV	NEV
EF CHV	0000		Mandatory	**Y**		8	4	80	10771	NEV	NEV	NEV	NEV
EF INFO	2FFF	Binary	Optional	Y		31		67	10704	ALW	ADM0	ADM0	ADM0
EF ICCID	2FE2	Binary	Mandatory	**Y**		10		46	10658	ALW	ADM2	ADM0	ADM0
EF ELP	2F05	Binary	Optional	N		0			10658	ALW	CHV1	ADM2	ADM2
EF ICC	0002	Binary	Optional	N		15			10658	ALW	ADM0	NEV	NEV
DF GSM	7F20	DF	Mandatory	**Y**				46	10612				
EF LP	6F05	Binary	Mandatory	**Y**		10		46	10566	ALW	CHV1	ADM2	ADM2
EF IMSI	6F07	Binary	Mandatory	**Y**		9		45	10521	CHV1	ADM2	CHV1	ADM2
EF KC	6F20	Binary	Mandatory	**Y**		9		45	10476	CHV1	CHV1	ADM2	ADM2
EF PLMNsel	6F30	Binary	Optional	**N**		105			10476	CHV1	CHV1	ADM2	ADM2
EF HPLMN	6F31	Binary	Mandatory	**Y**		1		37	10439	CHV1	ADM2	ADM2	ADM2
EF ACMmax	6F37	Binary	Optional	**N**		0			10439	CHV1	CHV2	ADM2	ADM2
EF SST	6F38	Binary	Mandatory	**Y**		8		44	10395	CHV1	ADM2	ADM2	ADM2
EF ACM	6F39	Cyclic	Optional	**N**		3	0		10395	CHV1	CHV2	ADM2	ADM2
EF GID1	6F3E	Binary	Optional	**Y**		16		52	10343	CHV1	ADM2	ADM2	ADM2
EF GID2	6F3F	Binary	Optional	**N**		0			10343	CHV1	ADM2	ADM2	ADM2
EF PUCT	6F41	Binary	Optional	**N**		5			10343	CHV1	CHV2	ADM2	ADM2
EF CBMI	6F45	Binary	Optional	**Y**		10		46	10297	CHV1	CHV1	ADM2	ADM2
EF SPN	6F46	Binary	Optional	**N**		17			10297	ALW	ADM2	ADM2	ADM2
EF BCCH	6F74	Binary	Mandatory	**Y**		16		52	10245	CHV1	CHV1	ADM2	ADM2
EF ACC	6F78	Binary	Mandatory	**Y**		2		38	10207	CHV1	ADM2	ADM2	ADM2
EF FPLMN	6F7B	Binary	Mandatory	**Y**		12		48	10159	CHV1	CHV1	ADM2	ADM2
EF LOCI	6F7E	Binary	Mandatory	**Y**		11		47	10112	CHV1	CHV1	CHV1	ADM2
EF AD	6FAD	Binary	Mandatory	**Y**		8		44	10068	ALW	ADM2	ADM2	ADM2
EF PHASE	6FAE	Binary	Mandatory	**Y**		1		37	10031	ALW	ADM2	ADM2	ADM2
EF DCK	6F2C	Binary	Optional	N		16			10031	CHV1	CHV1	ADM2	ADM2
EF CNL	6F32	Binary	Optional	N		0			10031	CHV1	ADM2	ADM2	ADM2
EF CBMID	6F48	Binary	Optional	Y		10		46	9985	CHV1	ADM2	ADM2	ADM2
EF CBMIR	6F50	Binary	Optional	N		8			9985	CHV1	CHV1	ADM2	ADM2
EF NIA	6F51	Linear	Optional	N	16	1	0		9985	CHV1	ADM2	ADM2	ADM2
EF KcGPRS	6F52	Binary	Optional	N		9			9985	CHV1	CHV1	ADM2	ADM2
EF LOCIGPRS	6F53	Binary	Optional	N		14			9985	CHV1	CHV1	ADM2	ADM2
EF SUME	6F54	Binary	Optional	N		8			9985	ADM2	ADM2	ADM2	ADM2
EF VGCS	6FB1	Binary	Optional	Y		200		236	9749	CHV1	ADM2	ADM2	ADM2
EF VGCSS	6FB2	Binary	Optional	Y		7		43	9706	CHV1	**CHV1**	ADM2	ADM2
EF VBS	6FB3	Binary	Optional	Y		200		236	9470	CHV1	ADM2	ADM2	ADM2
EF VBSS	6FB4	Binary	Optional	Y		7		43	9427	CHV1	**CHV1**	ADM2	ADM2
EF EMLPP	6FB5	Binary	Optional	Y		2		38	9389	CHV1	ADM2	ADM2	ADM2
EF AAEM	6FB6	Binary	Optional	Y		1		37	9352	CHV1	CHV1	ADM2	ADM2
EF ECC	6FB7	Binary	Optional	N		0			9352	ALW	ADM2	ADM2	ADM2
DF SoLSA	5F70	DF	Optional	N					9352				
EF SAI	4F30	Binary	Optional	N		8			9352	CHV1	ADM2	ADM2	ADM2
EF SLL	4F31	Linear	Optional	N	8	10	4		9352	CHV1	CHV1	ADM2	ADM2
DF TELECOM	7F10	DF	Mandatory	**Y**				46	9306				
EF ADN	6F3A	Linear	Optional	**Y**	14	14	100	2840	6466	CHV1	CHV1	CHV2	CHV2
EF FDN	6F3B	Linear	Optional	**N**	16	14	0		4666	CHV1	CHV2	ADM2	ADM2
EF SMS	6F3C	Linear	Optional	**Y**		176	10	1800	4666	CHV1	CHV1	ADM2	ADM2
EF CCP	6F3D	Linear	Optional	**N**		14	4		4506	CHV1	CHV1	ADM2	ADM2
EF MSISDN	6F40	Linear	Optional	**Y**	16	14	4	160	4506	CHV1	CHV1	ADM2	ADM2

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		TYPE	M/O	present	a-tag length	Fixed length	Rec NB	File length	EEPROM space	Read	Update	Rehab	Invalid
EF SMSP	6F42	Linear	Optional	**N**	16	28	5		4468	CHV1	CHV1	ADM2	ADM2
EF SMSS	6F43	Binary	Optional	**Y**		2		38	4468	CHV1	CHV1	ADM2	ADM2
EF LND	6F44	Cyclic	Optional	**N**	16	14	5		4468	CHV1	CHV1	ADM2	ADM2
EF EXT1	6F4A	Linear	Optional	**N**		13	0		4468	CHV1	CHV1	ADM2	ADM2
EF EXT2	6F4B	Linear	Optional	**N**		13	0		4468	CHV1	CHV2	ADM2	ADM2
EF SMSR	6F47	Linear	Optional	N		30	0		4468	CHV1	CHV1	ADM2	ADM2
EF SDN	6F49	Linear	Optional	Y	3	14	10	210	4258	CHV1	ADM2	ADM2	ADM2
EF EXT3	6F4C	Linear	Optional	N		13	0		4258	CHV1	ADM2	ADM2	ADM2
EF BDN	6F4D	Linear	Optional	N	16	14	0		4258	CHV1	CHV2	CHV2	CHV2
EF EXT4	6F4E	Linear	Optional	N		13	0		4258	CHV1	CHV2	ADM2	ADM2
DF DCS1800	7F21	DF	Optional	N					4258				
EF Voice msg.	6F11	Binary	Optional	N		2			4258	CHV1	CHV1	ADM2	ADM2
EF Serv. table	6F12	Linear	Optional	N	16	21	8		4258	CHV1	CHV1	ADM2	ADM2
EF Call fwd.flg.	6F13	Binary	Optional	N		2			4258	CHV1	CHV1	ADM2	ADM2
EF Oper. name	6F14	Binary	Optional	N		30			4258	CHV1	ADM2	ADM2	ADM2
EF Custm srv.	6F15	Binary	Optional	N		18			4258	CHV1	CHV1	ADM2	ADM2
EF CPHS Info	6F16	Binary	Optional	N		3			4258	CHV1	ADM2	ADM2	ADM2
EF Mailbox nb.	6F17	Linear	Optional	N	16	14	8		4258	CHV1	CHV1	ADM2	ADM2
EF Oper. shtn.	6F18	Binary	Optional	N		10			4258	CHV1	ADM2	ADM2	ADM2
EF Info. nb.	6F19	Linear	Optional	N	16	5	20		4258	CHV1	CHV1	ADM2	ADM2
DF OTA	7F40	DF	Optional	Y				46	4212				
EF key	1100	Key	Optional	Y		8	2	58	4154	NEV	NEV	NEV	NEV
EF script	6FD1	Binary	Optional	Y		512		548	3606	CHV1	ADM2	ADM2	ADM2
EF Compt	6FD2	Linear	Optional	Y	0	5	1	45	3561	CHV1	ADM2	ADM2	ADM2
EF Message	6FD3	Binary	Optional	Y		30		66	3495	CHV1	ADM2	ADM2	ADM2
DF EIRENE	7FE0	DF	Optional	Y				46	3449				
EF FN	6FF1	Linear	Optional	Y	0	9	81	769	2705	CHV1	CHV1	ADM1	ADM1
EF CallconfC	6FF2	Binary	Optional	Y		24		60	2645	CHV1	CHV1	ADM1	ADM1
EF Callconf_I	6FF3	Linear	Optional	Y	0	21	10	260	2385	CHV1	CHV1	ADM1	ADM1
EF Shunting	6FF4	Binary	Optional	Y		8		44	2341	CHV1	ADM1	ADM1	ADM1
EF GsmrPLMN	6FF5	Linear	Optional	Y	0	9	45	445	1896	CHV1	ADM1	ADM1	ADM1
EF NW	6F80	Linear	Optional	Y	0	8	45	400	1496	CHV1	ADM1	ADM1	ADM1
EF 5to8digits	6F81	Binary	Optional	Y	0	4		40	1456	CHV1	ADM1	ADM1	ADM1
EF 2digits	6F82	Binary	Optional	Y	0	4		40	1416	CHV1	ADM1	ADM1	ADM1
EF 8digits	6F83	Binary	Optional	Y	0	4		40	1376	CHV1	ADM1	ADM1	ADM1
EF 9digits	6F84	Binary	Optional	Y	0	4		40	1336	CHV1	ADM1	ADM1	ADM1
EF SSSS	6F85	Binary	Optional	Y	0	4		40	1296	CHV1	ADM1	ADM1	ADM1
EF LLLL	6F86	Binary	Optional	Y	0	4		40	1256	CHV1	ADM1	ADM1	ADM1
EF FreeNumber	6F87	Binary	Optional	Y	0	4		40	1216	CHV1	ADM1	ADM1	ADM1
EF FC	6F88	Linear	Optional	Y	0	3	101	343	873	CHV1	ADM1	ADM1	ADM1
EF Service	6F89	Linear	Optional	Y	0	3	3	49	824	CHV1	ADM1	ADM1	ADM1
EF Call	6F8A	Linear	Optional	Y	0	3	6	58	766	CHV1	ADM1	ADM1	ADM1
EF FctTeam	6F8B	Linear	Optional	Y	0	3	7	61	705	CHV1	ADM1	ADM1	ADM1
EF Gateway	6F8C	Linear	Optional	Y	0	3	3	61	644	CHV1	ADM1	ADM1	ADM1
EF IC	6F8D	Linear	Optional	Y	0	7	45	315	329	CHV1	ADM1	ADM1	ADM1
EF CT	6F8E	Linear	Optional	Y	0	6	10	100	229	CHV1	ADM1	ADM1	ADM1
EF SC	6F8F	Linear	Optional	Y	0	6	5	70	159	CHV1	ADM1	ADM1	ADM1
EF predefSC	6F90	Linear	Optional	Y	0	3	3	49	110	CHV1	ADM1	ADM1	ADM1
EF Location	6F91	Binary	Optional	Y	0	4		40	70	CHV1	ADM1	ADM1	ADM1
EF Controller	6F92	Linear	Optional	Y	0	3	4	52	18	CHV1	ADM1	ADM1	ADM1

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