Subject: **Application Selection and GSM compatibility**
Source: **Giesecke & Devrient**

Motivation: The "3rd Generation Partnership Project; Technical Specification Group Terminals USIM and IC Card Requirements (3G TS 21.111 version 3.0.0)" mandates support of "3GPP and non-3GPP" and compatibility to GSM and its mechanism if a GSM Functionality is on the same card as a UICC-Functionality.
(5) "Since a UICC may contain multiple (3GPP and non-3GPP) applications, a flexible method of controlling file access shall be provided."
(7.3) "An application execution environment may exist on the UICC/USIM which includes the functionality defined in GSM 11.14 [9]."
(11.2) "The specification shall allow the UICC to be used with a dual mode (GSM/ 3GPP) ME and a GSM ME for the provision of GSM service."
See also TDOCT3-99315 Chapter 11.1.3, 11.2.1 and 11.1

Goal: The GSM-Functionality has to be granted in 2nd generation terminals without changing the procedure and behaviour of this type of terminals. But still have the UICC-Commands available if not in a GSM-Session.

Strategy: Divide the card in at least two separate environments and handle them according the respective specification.
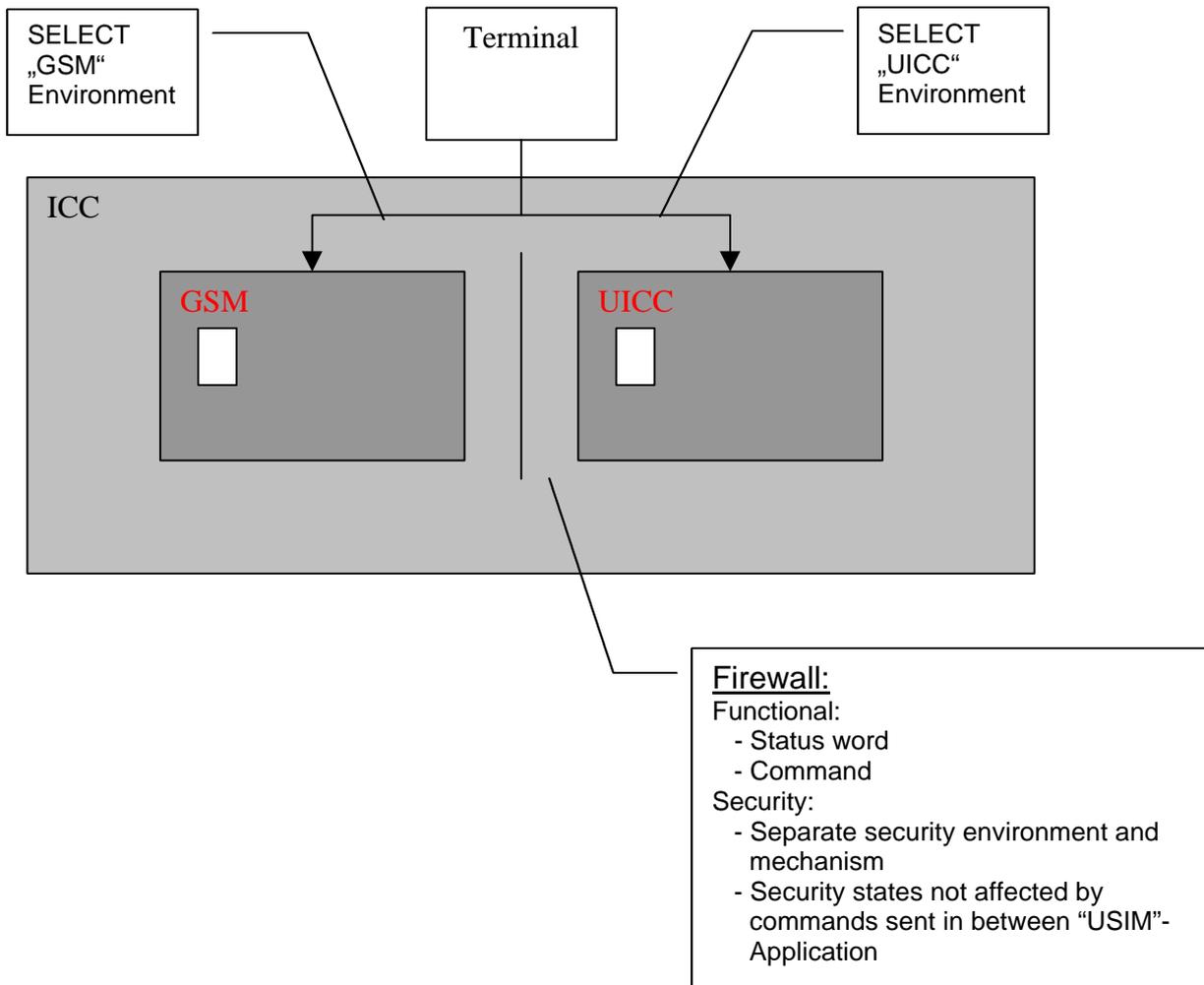
Process: Use the Proposal T3-99292 „GSM compatibility and application selection proposal" from NOKIA where means and procedure are described to achieve the goal.

- Why do we have to deal with the "Application selection proposal"
  - We have to deal with it only because of the requirement to support GSM on the UICC if there is GSM "onboard". The UICC also has support NON-3GPP Application.
    We would not to have deal with it if there is no such requirement.
- What do we mean by making the card close to ISO?
  - It means that a USIM Application may find or work with ISO-compliant commands as close as possible.
- But when we are in an ISO-compliant environment?
  - By selecting or starting the UICC. Then special initialisation-procedure for T=0 and T=1 is also done in this environment.

Advantages:

- Testing would be easier and faster
  Focus on GSM-Part-Testing
  Focus on USIM Appl.-Part-Testing
  => faster time-to-market
- Firewall between GSM and USIM
  Only commands of the selected Environment are allowed
  - Trade-Off in Firewall-Functionality, because of keeping redundancy small.
  - Different views to the same data in different environment (sharing of data)
    => redundancy kept small

- Implementation will be easier
  => faster delivery to the market
  because GSM Implementation can be left unchanged and is still free to be
  extended in its functionality (see STATUS-Command)
  Actually there are 2 Cards (GSM, UICC) in one single card ICC
- If we don't have GSM, we simply leave it away
- 100%-ISO-compliant solution when UICC selected
- CLA-Byte, which would be reserved for GSM, is still available in USIM

SELECT „GSM" Environment	Terminal	SELECT „UICC" Environment

ICC

GSM

UICC

Firewall:
Functional:
  - Status word
  - Command
Security:
  - Separate security environment and mechanism
  - Security states not affected by commands sent in between "USIM"-Application

- Migration of GSM and other NON-3GPP-Implementations to the UICC without affecting the specification of the respective implementation.

MF

DF „loyalty"

DF „Banking", e.g. Proton, GeldKarte, Visa-Cash

DF „GSM"
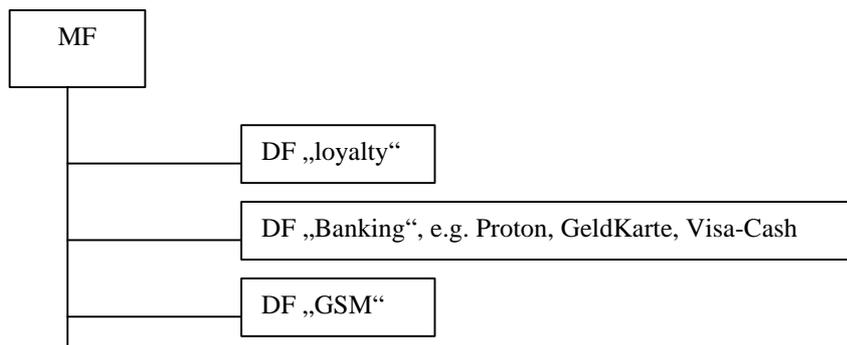
- How to use USIM-Application and NON-3GPP Application like GSM with a UICC
  on one card?
    - Simply add i.e. the AID = "3GPPUICC" to the MF
    - Select "3GPPUICC"
    - Select the Applications via the AID found in EF_DIR

```
┌──────────────────┐                              ┌──────────┐
│       MF         │                              │  USIM1   │
│ AID='3GPPUICC'   │                              └──────────┘
└──────────────────┘                              ┌──────────┐
         │                                        │  USIM2   │
         │           ┌──────────────┐             └──────────┘
         ├───────────│   EF_DIR     │             ┌──────────┐
         │           └──────────────┘             │  USIMx   │
         │                                        └──────────┘
         │           ┌──────────────┐
         ├───────────│ DF „USIM1"   │
         │           └──────────────┘
         │           ┌──────────────┐
         ├───────────│ DF „GSM"     │
         │           └──────────────┘
         │    ┌────────────────────────────────────────────────┐
         ├────│ DF „Banking", e.g. Proton, GeldKarte, Visa-Cash │
         │    └────────────────────────────────────────────────┘
         │
```
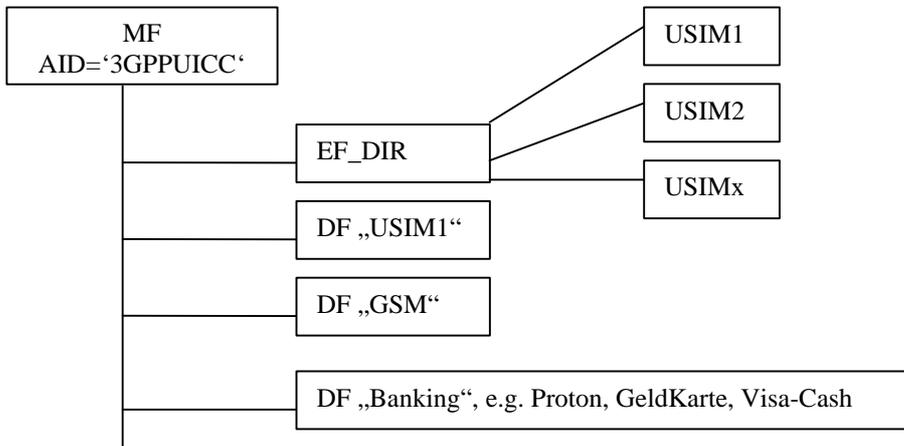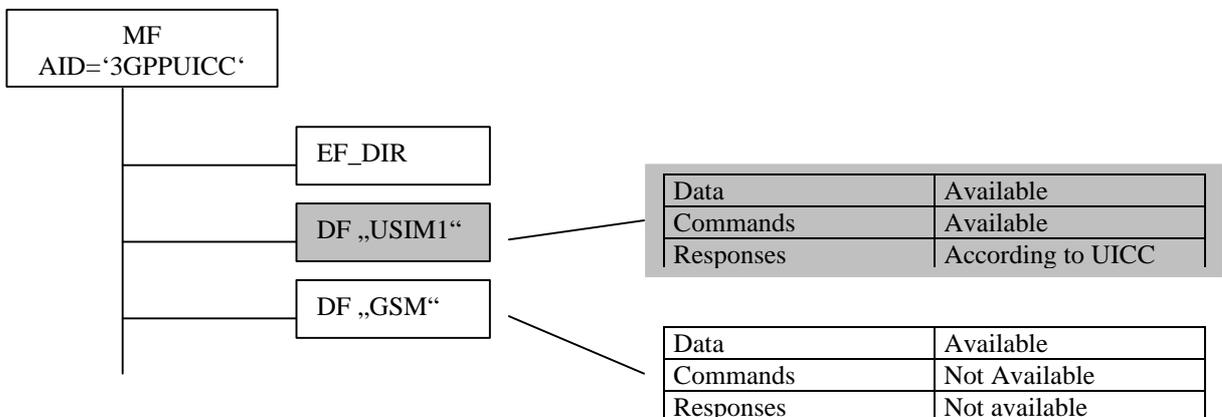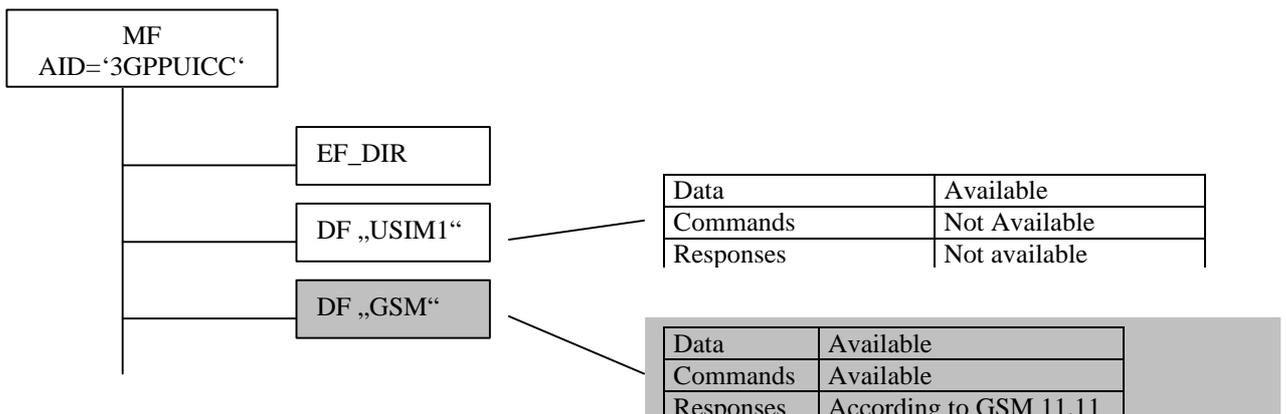
- What can be seen from the terminals point of view

Select "3GPPUICC"
Read EF_DIR
"USIM1"

```
┌──────────────────┐
│       MF         │
│ AID='3GPPUICC'   │
└──────────────────┘
         │
         │           ┌──────────────┐
         ├───────────│   EF_DIR     │
         │           └──────────────┘
         │           ┌──────────────┐
         ├───────────│ DF „USIM1"   │
         │           └──────────────┘
         │           ┌──────────────┐
         ├───────────│ DF „GSM"     │
         │           └──────────────┘
```

Data	Available
Commands	Available
Responses	According to UICC

Data	Available
Commands	Not Available
Responses	Not available

After RESET Implicit Selection of GSM-Environment
"GSM"

```
┌──────────────────┐
│       MF         │
│ AID='3GPPUICC'   │
└──────────────────┘
         │
         │           ┌──────────────┐
         ├───────────│   EF_DIR     │
         │           └──────────────┘
         │           ┌──────────────┐
         ├───────────│ DF „USIM1"   │
         │           └──────────────┘
         │           ┌──────────────┐
         ├───────────│ DF „GSM"     │
         │           └──────────────┘
```

Data	Available
Commands	Not Available
Responses	Not available

Data	Available
Commands	Available
Responses	According to GSM 11.11

- How to distinguish between Cards supporting GSM and a pure UICC-Implementation.

  In the card capabilities there will be a indication which indicates that the card supports GSM or any other NON-3GPP Application.

  This means that pure UICC Implementation will implicitly select "3GPPUICC" and Cards indicating NON-3GPP Applications will start-up in their NO-3GPP Environment. You'll get to a 3GPP Environment by Selecting "3GPP"

Conclusion:
Actually the application selection i.e. the pre-selection of NON-3GPP-Application makes it easier for the UICC to "co-exist" with application or implementation which are already in the field.