3GPP TSG-T (Terminals) Meeting #17
Biarritz, France, 4 - 6 September, 2002

Tdoc TP-020174

3GPP TSG-SA2 Meeting #25 **S2-022031**

Naantali, Finland, 24-28 June 2002

Title: Liasion Statement on GUP DDF

Source: SA2
To: T2
Cc: SA5, SA1, SA, T

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Attachments: S2-021806

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1. Overall Description:

A contribution was presented to SA2 suggesting a runtime data model consisting of

a) a Skeleton XML Schema defining the common parts of all Profile Components.

b) the use of XML Schema extension mechanism to define the Component specific parts.

There was a discussion in SA2 on the relation between this "GUP Schema Mechanism" and the current GUP DDF. It was recognised there may be a potential technical conflict between "GUP Schema Mechanism" and the current GUP DDF and a question was raised whether a separate GUP DDF mechanism is needed.

Therefore it was proposed to analyze the GUP data concept since this analysis is seen to be essential for the technical work on a data description mechanism.

Based on the analysis, the further technical work on the data description can be performed.

2. Actions:

ACTION TO T2:

The current data description will have an impact on the architecture we are constructing. The data description has to be incorporated into the general architecture. To achieve this we need a detailed explanation of the reasons for the current DDF. For instance alternative to the existing DDF concept may already exist. SA2 requests T2 to review the contribution S2-021806 as an example for such possible alternatives. **Based on the analysis T2 is requested to give guidance to SA2 on whether there are technical reasons to continue the work on GUP DDF or should one of the existing schema mechanisms be utilized within 3GPP systems.**

3. Date of Next S2 Meetings

S2#26	19-23 August, 2002	Canada
S2#27	14-18 October, 2002	TBD

3GPP TSG-SA2 Meeting #25 **S2-021806**

Naantali, Finland, 24-28 June 2002 **Agenda Item: 9.5**

Title: **GUP Information Model and GUP Schema Mechanism**

Source: **Nokia**

Document for: **Discussion and approval**

1 Introduction

This contribution proposes a rewrite of the clause 5. "GUP Information Model" of TS 23.240 and an inclusion of a new clause "6. GUP Harmonised Data Model" in the same document.

Further the contribution proposes the clause 6. "GUP Harmonised Data Model" to consist of two subclauses 6.1 "GUP Schema Mechanism" and 6.2 "GUP Access Interface". For the subclause 6.1 "GUP Schema Mechanism" a contents is further proposed.

2 Discussion

2.1 GUP Information Model

The current version of the clause 5. "GUP Information Model" contains only text describing the Data Definition Framework - the text should be part of the document TS 23.241. Instead the clause should contain text introducing the basic concepts like the Generic User Profile and Profile Component.

This contribution will propose a full rewrite of the text in the clause 5. The Ericsson contribution T2-020441 (from T2#17 in Vancouver) has been used as a basis for the clause 5.

The proposed text is a preliminary one in the sense that e.g. the definition of the logical contra physical view is excluded and must be included later on. Also the dynamic composition of the the Generic User Profile as a set Profile Components is excluded.

2.2 GUP Harmonised Data Model

2.2.1 Introduction

The TS 22.240 v0.9.1 subclause 6.1 lists following requirements:

- The GUP data shall be accessed by a standardised GUP interfaces and protocols which use the generic GUP data model to carry the user profile.
- The GUP Interface shall be independent of the structure and semantics of the data.
- The GUP access mechanism shall support accessing of the whole profile data or a selected part of it.
- The GUP access mechanism shall include read, create, modify and delete access.
- The GUP data shall be transferred in a standardised way.
- The GUP interface shall include a standardised way for access control.
- The GUP interface shall enforce the subscriber privacy.
- The GUP shall not cause significant additional load or delays to the network functions and elements.

The requirements imply a need for a Harmonised GUP Data Model including

a) a common schema mechanism for defining the structure of the Generic User Profile as a set of Profile Components and for defining the structure of the Profile Components and

b) a common access interface for the GUP data.

In this contribution we propose a schema mechanism for GUP - called GUP Schema Mechanism. The access interface will be left for future contributions.

We have identified the following requirements for the GUP Schema Mechanism:

1. The schema mechanism shall support the GUP Information Model. For example it shall support the definition of the Generic User Profile as a set of Profile Components.

2. The schema mechanism shall support independent definition of the separate Profile Components.

3. The schema mechanism shall allow incorporation of standard schemas for user information defined even outside 3GPP.

4. The schema mechanism shall be such that it would be easy and favourable to adopt into use (or provide a mapping) in other interface or protocol specifications related to user profile information handling.

5. The schema mechanism shall allow easy extensibility of the Generic User Profile by addition of new Components and by extension of existing Components.

6. Even if the schema mechanism shall be flexible enough to e.g. make independent definition of the Profile Components possible - both inside and outside 3GPP - the schema mechanism shall be strict enough to make e.g. a centralized schema validation and access control possible.

The current mainstream schema mechanisms are based on XML Schema by W3C.

We suggest a schema mechanism based on the XML Schema for GUP. The mechanism follows the principles used at IETF to define XML Schemas - the principles being documented e.g. by http://search.ietf.org/internet-drafts/draft-hollenbeck-ietf-xml-guidelines-04.txt and applied e.g. for Presence in http://www.ietf.org/internet-drafts/draft-ietf-impp-cpim-pidf-05.txt.

2.2.2 Relationship to GUP DDF

The proposed GUP Schema Mechanism is not in conflict with the work done on GUP DDF - see TS 23.241 - but has some implications on the GUP DDF work:

If the GUP DDF is used for defining GUP Profile Components, a tool for transforming the definition based on the GUP DDF to a definition based on the the GUP Schema Mechanism is needed. The tool is propably much like the tool (XSLT transformation) transforming the DDF definition to the default transport format. The difference is that the new tool must strictly follow the rules defined for the GUP Schema Mechanism.

Another issue then is when to use the GUP DDF for defining the GUP Components and when the GUP Schema Mechanism alone is sufficient. This issue must be further studied but our impression is that for new Profile Components using only the GUP Schema Mechanism is propably most straightforward.

2.2.3 The GUP Schema Mechanism

The GUP Schema Mechanism consists of a "skeleton" schema and an extension mechanism used to "fill the skeleton" with concrete Profile Components:

a) The schema called GUP XML Schema defines the structure of the GUP XML Documents - each GUP XML Document representing the Generic User Profile of a user as a set of Profile Components.

   The GUP XML Schema defines an element *gupProfile* as a sequence of elements of type *profileComponent*. The type *profileComponent* represents the common parts of all Profile Components - such as access control data and semantics.

   What the common parts of all the Profile Components are is still FFS. The URL for the name space is also FFS.

b) The standard extension mechanism of XML Schema is used to define the Profile Components as an extension of the type *profileComponent*. For each Profile Component definition separate name spaces shall be used.

The GUP XML Schema is defined on the following page.

```
<?xml version="1.0" encoding="UTF-8"?>
  <xs:schema targetNamespace=" "
      xmlns:gup=""
      xmlns:xs="http://www.w3.org/2001/XMLSchema"
      elementFormDefault="qualified"
      attributeFormDefault="unqualified">
    <xs:element name="gupProfile">
      <xs:complexType>
          <xs:element name="profileComponent" type="gup:profileComponent" minOccurs="0"
        maxOccurs="unbounded" />
      </xs:complexType>
      </xs:element>

    <xs:complexType name="profileComponent">
     <xs:sequence>
      <xs:element name="" type=""> ! The elements to be included are FFS

    </xs:complexType>
</xs:schema>
```

An optimal solution would be to use some even more widely - e.g. in W3C - standardised schema as basis for the 3GPP GUP Schema.

3 Proposal

We propose to agree the following general solution to include the following contents to the clauses 5 and 6 of the 3GPP Generic User Profile - Architecture Stage 2 TS 23.240 v0.4.1.

If the contribution is agreed, Nokia are willing to provide further content to specify the GUP Information Model and GUP Harmonised Data Model in more detail.

Nokia are also volunteering to study the possibility to use some more widely standardised - e.g. in W3C - schema as basis for the 3GPP GUP Schema, and to study when to use the GUP DDF for defining the GUP Components and when the GUP Schema Mechanism alone is sufficient.

5 GUP Information Model

~~Editor's Note:~~

~~This clause includes:~~

- ~~Generic GUP Information Model~~
- ~~Definition of GUP component~~
- ~~Role of Data Description Framework in the GUP. The DDF itself is specified in details in the separate document TS 23.241.~~

A Generic User Profile consists of a number of independent Profile Components.

The Profile Component is the unit of allocation. The component as a whole is stored in one location. It may also be cached and/or be backed up in some other locations.

The Profile Component has a within the Generic User Profile unique identity.

A Profile Component contains zero or more Data Elements. A (composite) Datatype is used to define which Data Elements belong to the Profile Component.

The UML Class Diagram below illustrates the basic concepts of GUP.

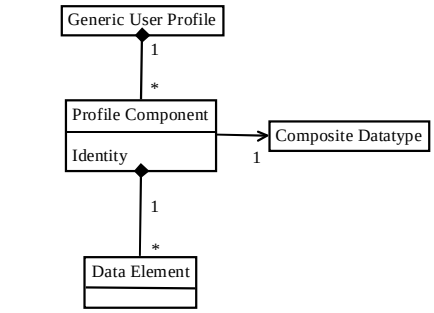


Figure 5.1: The basic concepts of GUP

Editor's note: The Current Class Diagram presents a static composition of the Generic User Profile as a set of Profile Components. The Information Model must be extended to even include a dynamic composition.

Editor's note: Logical/Physical view on Profile Component to be added later. Handling of shared Data Elements of Profile Components must be added later.

~~The data description can be split in the followinglogical levels:~~

- ~~**Data**~~
  ~~Data stored and / or accessed in a User Profile~~
- ~~**Data Description**~~
  ~~describes the data contained in the User Profile. (This is also called the Schema level.)~~
- ~~**Data Description Framework**~~
  ~~Defines how to create the data description. (This is also called the Schema-Schema level i.e. the Schema describing the Schema, which describes the data.)~~

~~Editor's note: Revise to clarify the relation to the GUP definition; fix the colours.~~

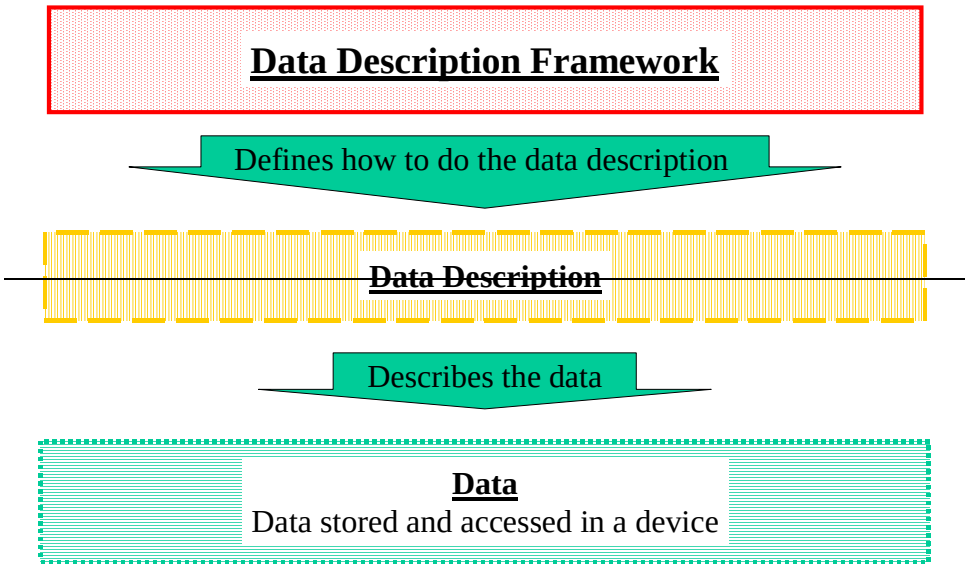


Figure 5.1: Data Description Framework logical levels

5.1 Data Description Framework

The Data Description Framework defines the method to describe the data in a User Profile. It defines the structure of the data description.

It is standardised and used for all User Profiles.

The Data Description Framework also defines a default representation (or transport format) of Data Descriptions and the data in a User Profile.

5.2 Data Description

A specific User Profile will be described, according to the Data Description Framework, resulting in a Data Description.

5.3 Data

The structure and semantic of the data in the User Profile is described in the Data Description. The Data Description Framework also defines a default representation of the data in the User Profile.

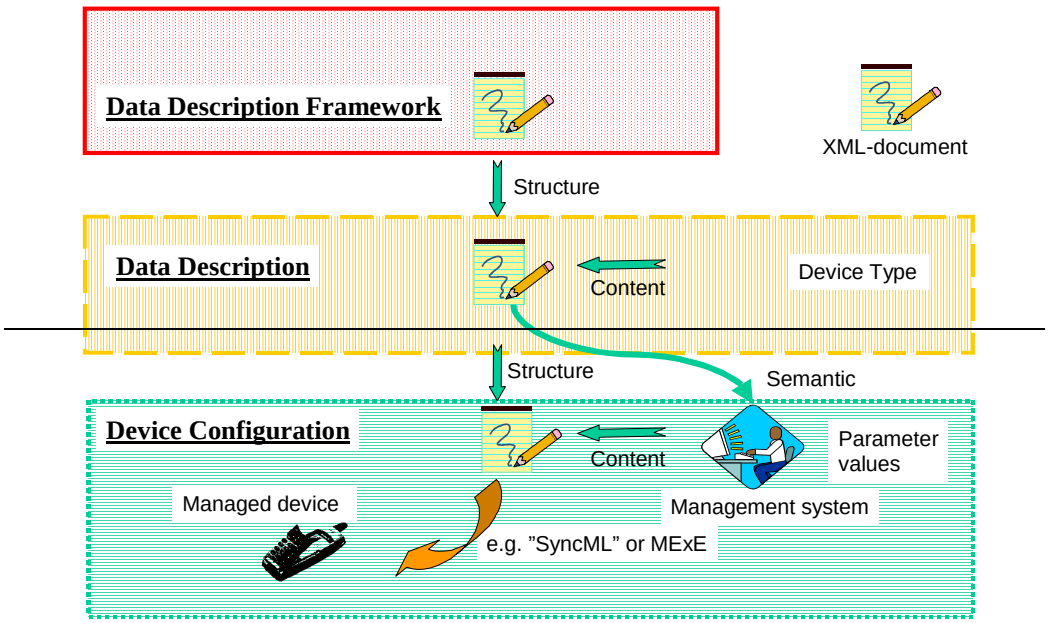
5.4 A use case example: UE Configuration

This is an example showing how the Data Description Framework, a Data Description and the related data can be used. A User Equipment (UE) Configuration Support System is used as an example and the data described in a Data Description is the data used to configure or personalise a UE.

Figure 5.2 illustrates how the Data Description Framework, Data Description, and Data interrelate.

The **Data Description Framework** defines the syntax and semantics of the Data Description. The **Data Description** is describing the **Data**, i.e., device configuration, which can be accessed by the UE Configuration Support. The Data Description describes the structure or syntax of the configuration data. The semantics or meaning of data are also given using normal language.

There is only **one** Data Description Framework. As a consequence, this framework is common to all device types. For each device type, there is one Data Description; thus, **several hundred** Data Descriptions will exist. The device configuration data is specific to each unique device; thus, **several million** device configurations will exist.



~~Figure 5.2: Usage of Data Description Domains in User Equipment configuration support~~

6 GUP Harmonised Data Model

6.1 GUP Schema Mechanism

The GUP Schema Mechanism defines a way for representing the Generic User Profile as a set of Profile Components. It also defines a way for defining the Profile Components.

The GUP Schema Mechanism is primarily a standardised way for defining new Profile Components but provides also a basis for standardising access interface, access control, privacy protection, the mechanism for locating the Profile Components etc.

The GUP Schema Mechanism concists of two parts - the GUP XML Schema and the XML extension mechanism.

The GUP XML Schema defines the structure of a Generic User Profile as a set of Profile Components.

The extension mechanism of XML Schema shall be used to define the Profile Components based on the type profileComponent defined in the GUP XML Schema. Each Profile Component shall be defined in a separate name space.

The GUP XML Schema is defined below.

Editor's note: The elements of the type profileComponent and the URL of the target name space must be defined later. If the GUP XML Schema will be defined as an extension of some other schema the schema defined here must be modified accordingly.

```
<?xml version="1.0" encoding="UTF-8"?>

  <xs:schema targetNamespace="…"

      xmlns:gup="…"

      xmlns:xs="http://www.w3.org/2001/XMLSchema"

      elementFormDefault="qualified"

      attributeFormDefault="unqualified">


    <xs:element name="gupProfile">

        <xs:complexType>

            <xs:element name="profileComponent" type="gup:profileComponent" minOccurs="0"
          maxOccurs="unbounded" />

        </xs:complexType>

    </xs:element>

   <xs:complexType name="profileComponent">

     <xs:sequence>

       <xs:element name="…" type="…"/>


     </xs:sequence>

   </xs:complexType>

</xs:schema>
```

6.2 GUP Access Interface

Editor's note: This subclause shall define the access interface at the level appropriate for this document.