Source: **SA5 (Telecom Management)**

Title: New Rel-6 TR 32.803-100 "Telecommunication management; Process Guide; Use Cases in Unified Modelling Language (UML)" **- For SA Information**

Document for: **Information**

Agenda Item: **7.5.3**

SP-040109	New Rel-6 TR 32.803-100 "Telecommunication management; Process Guide; Use Cases in Unified Modelling Language (UML)" - **For SA Information**

3GPP TSG-SA5 (Telecom Management) **S5-042154**
Meeting #37, Malaga, SPAIN, 23 - 27 Feb 2004

Presentation of Technical Specification to TSG SA

Presentation to:	**TSG SA Meeting #23**
Document for presentation:	**TR 32.803, Version 1.0.0**
	Process Guide; Use Cases in Unified Modelling Language
Presented for:	**Information**

Abstract of document:
This TR is used to document method information for the development of use cases for TS 32.140.

Work done is against the WID contained in SP-020448 (Feature SuM).

Purpose of This Report:
This TR has been created to allow method information (currently included in TS 32.140) to be removed. It enables a CR to 32.140 which adds new use cases to annex B of 32.140 this work has been has been done using the templates defined in this new TR 32.803.

Changes since last presentation to TSG-SA:
New.

Outstanding Issues:
None.

Contentious Issues:
None.

3GPP TR 32.803 V1.0.0 (2004-03)

Technical Report

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Telecommunication management;
Process Guide;
Use Cases in Unified Modelling Language (UML)
(Release 6)

Keywords

3GPP

Postal address

3GPP support office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet

http://www.3gpp.org

Contents

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document is a guide for developing subscription management requirements in the form of use cases.

The present document is used to allow use case process information from 3GPP TS 32.140. It is intended that this applies only to the subscription management work item in release 6.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] "The unified Modelling language user guide" by Grady Booch, James Rumbaugh, and Ivar Jacobson published by Addison Wesley ISBN 0-201-57168-4.

[2] OMG Unified Modelling Language Specification version 1.5.

[3] The Unified Modeling Language Reference Manual.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

actor: an abstraction for entities outside a system, subsystem or class that interact directly with the system
An actor participates in a use case or coherent set of use cases to accomplish an overall purpose.

real time: time, typically in number of seconds, to perform the on-line mechanism used for fraud control and cost control

relation: shows the use cases an actor may interact with
It is represented by a line drawn between a role played by an actor and a use cases the role needs to interact with.

short time: time, typically in number of minutes, to perform the off-line mechanism used for accounting

system boundary: is represented by a square box
Every system has a boundary. The system contains the processes and data necessary for the system's enterprise. The system is influenced by the interactions roles have with the system.

use case: construct is used to define the behaviour of a system or other semantic entity without revealing the entity's internal structure
Each use case specifies a sequence of actions, including variants, that the entity can perform, interacting of the entity.

use case diagram: diagram that shows the relation among users and actors within a system

3.2 Symbols

For the purposes of the present document, the following symbols apply:

<BOX>	System Boundary
<ELIPSE>	Use case representing a particular use which may be made of the system by a role. This may be considered as something the system can offer by way of a service to a role.
<LINE>	A line drawn between an actor, playing a role, and a use case shows the uses the actor may make of the system
<Stick Man>	Represents an actor, the role is depicted in text underneath the stick man (actor)

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

NRT	Non-Real Time
RT	Real Time
UML	Unified Modelling Language

4 Diagramming tools

UML use case modelling supports a number of diagramming techniques and terms to represent the systems concepts of:

- system boundary;
- actors;
- roles;
- use cases.

A number of analysis and drawing tools provide diagramming aids to support UML in the development of use cases.

A rectangular box shows the system boundary. Interactions with the system environment are shown by drawing relations (represented by lines) from actors to use cases within the systems boundary.

The actor is a modelling concept, which models someone or something that is making a use of the system.

A "stick man" represents an actor.

When developing a system, a number of roles are identified covering the aspics of the system being developed (e.g. users, administrators, maintenance persons and systems, etc.).

The actor plays a particular role. A role can be that of a person, or a function which is external to the system.

A use case shows a particular usage of the system, and is represented by an elliptical shape.

The use cases represent the capabilities that are within the system. One view could be the services a system offers to someone or something external to the system.

The usage that each role needs to make of the system may be shown by drawing relations (lines) from the actor playing a particular role to the use case(s)s the role needs to use.

This is illustrated in figure 1.

The use cases show at a high level the interactions between the roles and capabilities the system is designed to provide.

Rather than defining the method of doing this it is considered best to refer to texts that are readily available such as the reference book including the work of Ivar Jacobson [1], the OMG Unified Modeling Language Specification version 1.5 [2] and Unified Modeling Language Reference Manual [3].

4.1 System boundary and system context

The system context can be used to show a system context, comprising a system boundary and the external things which interact (make use of the system). The capabilities of the system are shown by the use cases. This is shown in figure 1.

The actor playing role 1 may use either capability 1 or capability 2.

The actor playing role 2 may use capability 2.

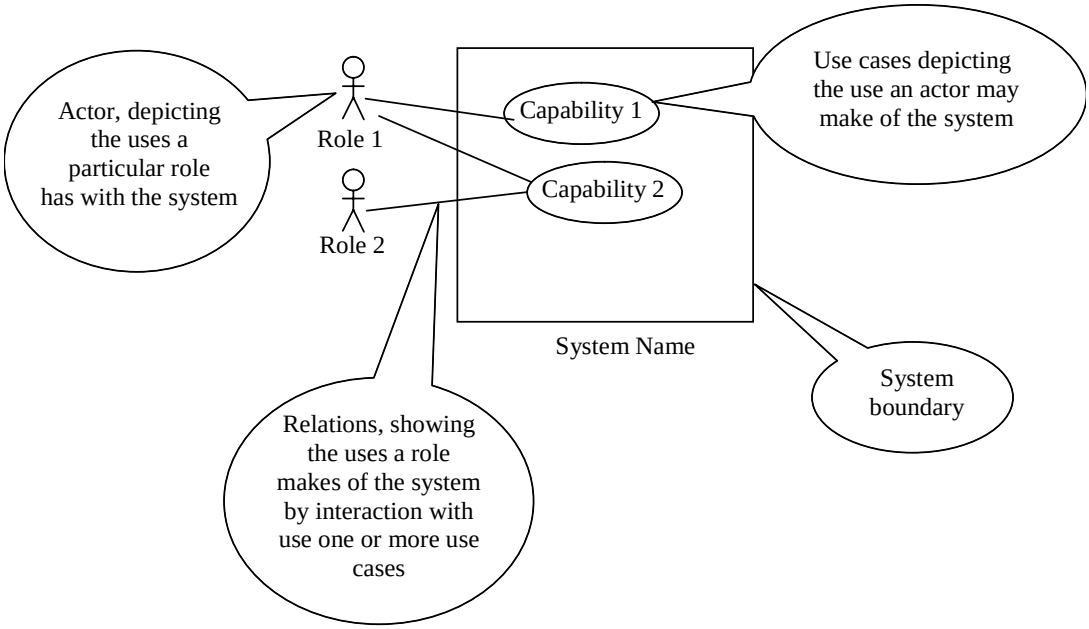

Figure 1: Depicting a system context

4.2 Use Case documentation template

Table 1 provides a template with some notes fro completion to aid the documentation use case in more detail the behaviour of the system.
The use case should not be concerned with architectural issues or divisions of functionality.

A use case table using the documentation table may be used to represent the complete end-to-end process at a level appropriate to the problem being analysed.

It is permitted to develop successively more detailed analysis of each step of a higher abstraction level use case by referring to the more detailed use case in the table cell reserved for this purpose.
It is emphasized this does not have to be done, and is subjective depending upon the need of the author/group.

4.3 Starting point suggestions

These are intended aids to overcome the getting started/blank sheet of paper syndrome.

- Consider what the main purpose of the system is.
- What types of people /system/ need to interact with the system.
- Can these people/systems be grouped or abstracted to roles.
- Consider the start up, normal running, failure analysis and recovery aspects of the system.
- Consider what types of reports or data may be needed from the system.
- Consider if times of day / network loads may require special activities.

To help organize the documentation of use cases table 1 is provided with guidance notes for completion.

Table 2 is provided for inclusion and completion within other specifications.

- A section title that represents the goal statement of the use case.

Table 1

Use Case Stage	Evolution / Specification	<<Uses>> Related use
Goal	This is the objective/end result the use case strives to is to achieve and should be a concise statement of what the use case should achieve in a 'sunny day' scenario. There may be a statement about priority relative to other use cases and required performance of the use case e.g. • Real Time. • Near real time. • Not real time.	
Actor and Roles	The names of actors/roles involved in the use case including role characteristic for each actor.	
Assumptions	A description of the environment providing a context for the use case. Assumptions are mutually exclusive to pre conditions.	
Pre conditions	A list of all system and environment conditions that must be true before the use case can be triggered. Pre conditions are mutually exclusive to assumptions.	
Begins when	The name of the single event that triggers the start of the use case	
Step n	Steps may invoke other use cases	Reference to a used use case.
Step (n+1)	Steps added as necessary and in a logical sequence.	
Ends when	The event(s) that signals that the use case has terminated.	
Exceptions	A summary list of all exception conditions and faults detected by the use case during its operation	
Post Conditions	A list of all system and environmental; conditions that must be true if the use case has terminated without internal error.	
Traceability	Requirements exposed by the use case	

4.4 Template for documenting use cases

To help document navigation it may be useful to provide a heading reflecting the use case goal that will appear in the document's table of contents.

Table 2

Use Case Stage	Evolution / Specification	<<Uses>> Related use
Goal		
Actor and Roles		
Assumptions		
Pre conditions		
Begins when		
Step n		
Step (n+1)		
Ends when		
Exceptions		
Post Conditions	.	
Traceability		

Annex A (informative): Change history

SA5-internal Change history							
Date	**SA5 #**	**SA5 Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2004	S_23	SP-040109	--	--	Submitted to TSG SA#23 for Information	1.0.0	