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Technical Specification

Universal Mobile Telecommunications System (UMTS);
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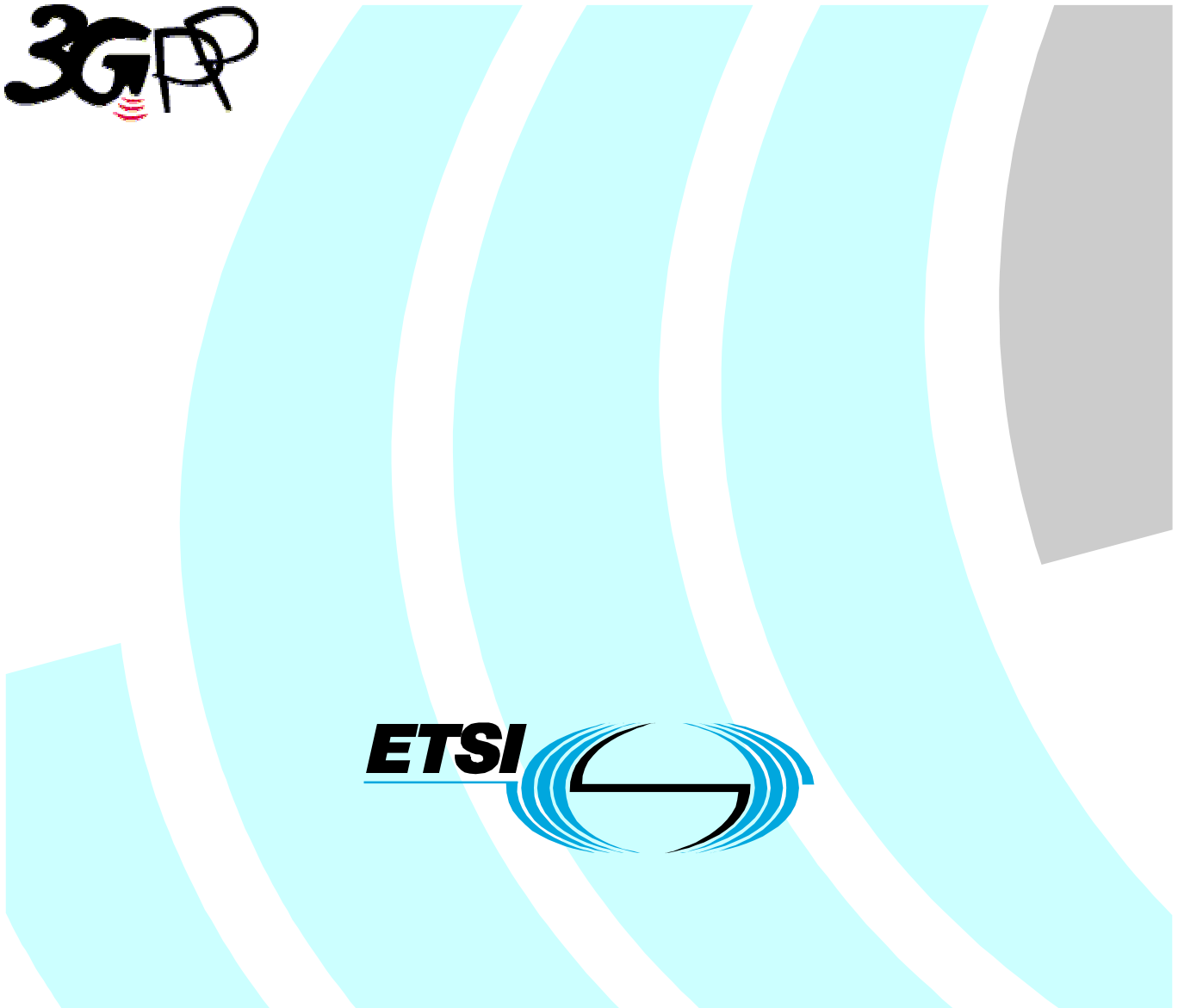
UTRAN network resources IRP: CORBA solution set
(3GPP TS 32.643 version 4.1.0 Release 4)



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Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under www.etsi.org/key .

Contents

Foreword

This Technical Specification 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.

Introduction

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G-network as it evolves. CM actions have the objective to control and monitor the actual configuration on the NEs and NRs, and they may be initiated by the operator or functions in the OSs or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service. The CM actions are initiated either as a single action on a Network Element (NE) of the 3G-network or as part of a complex procedure involving actions on many NEs.

The Itf-N interface for Configuration Management is built up by a number of Integration Reference Points (IRPs) and a related Name Convention, which realise the functional capabilities over this interface. The basic structure of the IRPs is defined in 3GPP TS 32.101 [1] and 3GPP TS 32.102 [2].For CM, a number of IRPs (and the Name Convention) are defined herein, used by this as well as other technical specifications for telecom management produced by 3GPP.

Due to the growing number of specifications to model new services and Resource Models for Configuration Management (CM), as well as the expected growth in size of each of them from 3GPP Release 4 onwards, a new structure of the specifications is already needed in Release 4. This structure is needed for several reasons, but mainly to enable more independent development and release for each part, as well as a simpler document identification and version handling. Another benefit would be that it becomes easier for bodies outside 3GPP, such as the ITU-T, to refer to telecom management specifications from 3GPP. The new structure of the specifications does not lose any information or functionality supported by the Release 1999. The restructuring also includes defining new IRPs for the Network Resource Model (NRM) parts of R99 Basic CM IRP (Generic, Core Network and UTRAN NRM). These IRPs are named “Network Resources IRP”.

Further, the Notification IRP (in Release 1999: 32.106-1 to -4) and the Name convention for Managed Objects (in Release 1999: 32.106-8) have been moved to a separate number series used for specifications common between several management areas (e.g. CM, FM, PM).

Finally, in addition to the restructuring mentioned above, the need to define some new functionality and IRPs for CM compared to Release 1999, has also been identified. Firstly, a new Bulk CM IRP, and secondly an a GERAN Network Resources IRP, have been created. Thirdly, the Generic, UTRAN and GERAN Network Resources IRPs have been extended with support for GSM-UMTS Inter-system handover (ISH), and the 32.600 (Concept and High-level Requirements) has been modified to cover the high-level Bulk CM and ISH requirements.

Table: Mapping between Release '99 and the new specification numbering scheme

R99 Old no.	Old (R99) specification title	Rel-4 New no.	New (Rel-4) specification title
32.106-1	3G Configuration Management: Concept and Requirements	32.600	**3G Configuration Management**: **Concept and High-level Requirements**
32.106-1	<Notification IRP requirements from 32.106-1 and 32.106-2>	32.301	**Notification IRP**: Requirements
32.106-2	Notification IRP: IS	32.302	Notification IRP: Information Service
32.106-3	Notification IRP: CORBA SS	32.303	Notification IRP: CORBA SS
32.106-4	Notification IRP: CMIP SS	32.304	Notification IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	**Name Convention for Managed Objects**
32.106-1	<Basic CM IRP IS requirements from 32.106-1 and 32.106-5>	32.601	**Basic CM IRP**: Requirements
32.106-5	Basic CM IRP IM (Intro & IS part)	32.602	Basic CM IRP: Information Service
32.106-6	Basic CM IRP CORBA SS (IS related part)	32.603	Basic CM IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (IS related part)	32.604	Basic CM IRP: CMIP SS
32.106-8	Name convention for Managed Objects	32.300	**Name Convention for Managed Objects**
-	-	32.611	**Bulk CM IRP**: Requirements
-	-	32.612	Bulk CM IRP: Information Service
-	-	32.613	Bulk CM IRP: CORBA SS
-	-	32.614	Bulk CM IRP: CMIP SS
		32.615	Bulk CM IRP: XML file format definition
32.106-1	<Basic CM IRP Generic NRM requirements from 32.106-1 and 32.106-5>	32.621	**Generic Network Resources IRP**: Requirements
32.106-5	Basic CM IRP IM (Generic NRM part)	32.622	Generic Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (Generic NRM related part)	32.623	Generic Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (Generic NRM related part)	32.624	Generic Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP CN NRM requirements from 32.106-1 and 32.106-5>	32.631	**Core Network Resources IRP**: Requirements
32.106-5	Basic CM IRP IM (CN NRM part)	32.632	Core Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (CN NRM related part)	32.633	Core Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (CN NRM related part)	32.634	Core Network Resources IRP: CMIP SS
32.106-1	<Basic CM IRP UTRAN NRM requirements from 32.106-1 and 32.106-5>	32.641	**UTRAN Network Resources IRP**: Requirements
32.106-5	Basic CM IRP IM (UTRAN NRM part)	32.642	UTRAN Network Resources IRP: NRM
32.106-6	Basic CM IRP CORBA SS (UTRAN NRM related part)	32.643	UTRAN Network Resources IRP: CORBA SS
32.106-7	Basic CM IRP CMIP SS (UTRAN NRM related part)	32.644	UTRAN Network Resources IRP: CMIP SS
		32.651	**GERAN Network Resources IRP**: Requirements
		32.652	GERAN Network Resources IRP: NRM
		32.653	GERAN Network Resources IRP: CORBA SS
		32.654	GERAN Network Resources IRP: CMIP SS

1 Scope

The purpose of this UTRAN Network Resources IRP: CORBA Solution Set is to define the mapping of the IRP information model (see 3GPP TS 32.642 [4]) to the protocol specific details necessary for implementation of this IRP in a CORBA/IDL environment.

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] 3GPP TS 32.101: "3G Telecom Management principles and high level requirements".

[2] 3GPP TS 32.102: "3G Telecom Management architecture".

[3] 3GPP TS 32.600: “3G Configuration Management”.

[4] 3GPP TS 32.642: “UTRAN Network Resources IRP: NRM”.

[5] 3GPP TS 32.300: “Name Convention for Managed Objects”.

[6] OMG Notification Service, Version 1.0.

[7] OMG CORBA services: Common Object Services Specification, Update: November 22, 1996.

[8] The Common Object Request Broker: Architecture and Specification (for specification of valid version, see [1]).

[9] 3GPP TS 32.303: “Notification IRP: CORBA Solution Set, Version 1:1”.

[10] 3GPP TS 32.111-3: “Alarm IRP: CORBA Solution Set, Version 1:1”.

3 Definitions and abbreviations

3.1 Definitions

For terms and definitions please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3] and 3GPP TS 32.642 [4].

3.2 Abbreviations

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

CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
IS	Information Service
IDL	Interface Definition Language (OMG)
IRP	Integration Reference Point

MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set

4 Architectural features

The overall architectural feature of UTRAN Network Resources IRP is specified in 3GPP TS 32.642[4].
This clause specifies features that are specific to the CORBA SS.

4.1 Notifications

Notifications are sent according to the Notification IRP: CORBA SS (see 3GPP TS 32.303 [9]).

5 Mapping

5.1 General mappings

The IS parameter name managedObjectInstance is mapped into DN.

Attributes modelling associations as defined in the NRM (here also called “reference attributes”) are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

If a reference attribute is changed, an AttributeValueChange notification is emitted.

5.2 UTRAN NRM Managed Object Class (MOC) mapping

5.2.1 MOC `RncFunction`

Table 18: Mapping from NRM `MOC RncFunction` attributes to SS equivalent MOC `RncFunction` attributes

NRM Attributes of MOC `RncFunction` in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
`rncFunctionId`	`rncFunctionId`	string	Read-Only, M
`userLabel`	`userLabel`	string	Read-Write, M
`mcc`	`mcc`	long	Read-Write, M
`mnc`	`mnc`	long	Read-Write, M
`rncId`	`rncId`	long	Read-Write, M

5.2.2 MOC UtranCell

Table 19: Mapping from NRM MOC UtranCell attributes and associations to SS equivalent MOC UtranCell attributes

NRM Associations/Attributes of MOC UtranCell in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
utranCellId	utranCellId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
cId	cId	long	Read-Write, M
localCellId	localCellId	long	Read-Write, M
uarfcnUl	uarfcnUl	long	Read-Write, M
uarfcnDl	uarfcnDl	long	Read-Write, M
primaryScramblingCode	primaryScramblingCode	long	Read-Write, M
primaryCpichPower	primaryCpichPower	long	Read-Write, M
maximumTransmissionPower	maximumTransmissionPower	long	Read-Write, M
primarySchPower	primarySchPower	long	Read-Write, M
secondarySchPower	secondarySchPower	long	Read-Write, M
bchPower	bchPower	long	Read-Write, M
lac	lac	long	Read-Write, M
rac	rac	long	Read-Write, M
sac	sac	long	Read-Write, M
ura	ura	long	Read-Write, M
AssociatedWith/ utranCell-IubLink	utranCellIubLink	GenericNRIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.3 MOC NodeBFunction

Table 20: Mapping from NRM MOC NodeBFunction attributes and associations to SS equivalent MOC NodeBFunction attributes

NRM Associations/Attributes of MOC NodeBFunction in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
nodeBFunctionId	nodeBFunctionId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
ConnectedTo/ nodeBFunction-IubLink	nodeBFunctionIubLink	GenericNRIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.4 MOC IubLink

Table 21: Mapping from NRM MOC IubLink attributes and associations to SS equivalent MOC IubLink attributes

NRM Associations/Attributes of MOC IubLink in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
iubLinkId	iubLinkId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
AssociatedWith/ iubLink-UtranCell	iubLinkUtranCell	GenericNRIRPSystem::AttributeTypes::MOReferenceSet	Read- Write, M
ConnectedTo/ iubLink-NodeBFunction	iubLinkNodeBFunction	GenericNRIRPSystem::AttributeTypes::MOReference	Read-Only, M

5.2.5 MOC UtranRelation

Table 22: Mapping from NRM MOC UtranRelation attributes and associations to SS equivalent MOC UtranRelation attributes

NRM Associations/Attributes of MOC UtranRelation in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
utranRelationId	utranRelationId	string	Read-Only, M
relationType	relationType	string	Read-Write, M
adjacentCell	adjacentCell	string	Read-Write, M
uarfcnUl	uarfcnUl	long	Read- Only, O
uarfcnDl	uarfcnDl	long	Read- Only, O
primaryScramblingCode	primaryScramblingCode	long	Read- Only, O
primaryCpichPower	primaryCpichPower	long	Read- Only, O
lac	lac	long	Read- Only, O

5.2.6 MOC ExternalUtranCell

Table 23: Mapping from NRM MOC ExternalUtranCell attributes and associations to SS equivalent MOC ExternalUtranCell attributes

NRM Associations/Attributes of MOC ExteralUtranCell in 3GPP TS 32.642 [4]	SS Attributes	SS Type	Qualifier
externalUtranCellId	externalUtranCellId	string	Read-Only, M
userLabel	userLabel	string	Read-Write, M
cId	cId	long	Read-Write, M
mcc	mcc	long	Read-Write, M
mnc	mnc	long	Read-Write, M
rncId	rncId	long	Read-Write, M
uarfcnUl	uarfcnUl	long	Read-Write, M
uarfcnDl	uarfcnDl	long	Read-Write, M
primaryScramblingCode	primaryScramblingCode	long	Read-Write, M
primaryCpichPower	primaryCpichPower	long	Read-Write, M
lac	lac	long	Read-Write, M
rac	rac	long	Read-Write, M

6 Rules for management information model extensions

This clause discusses how the models and IDL definitions provided the present document can be extended for a particular implementation and still remain compliant with 3GPP SA5's specifications.

6.1 Allowed extensions

Vendor-specific MOCs may be supported. The vendor-specific MOCs may support new types of attributes. The 3GPP SA5-specified notifications may be issued referring to the vendor-specific MOCs and vendor-specific attributes. New MOCs shall be distinguishable from 3GPP SA5 MOCs by name. 3GPP SA5-specified and vendor-specific attributes may be used in vendor-specific MOCs. Vendor-specific attribute names shall be distinguishable from existing attribute names.

NRM MOCs may be subclassed. Subclassed MOCs shall maintain the specified behaviour of the 3GPP SA5's superior classes. They may add vendor-specific behaviour with vendor-specific attributes. When subclassing, naming attributes cannot be changed. The subclassed MOC shall support all attributes of its superior class. Vendor-specific attributes cannot be added to 3GPP SA5 NRM MOCs without subclassing.

When subclassing, the 3GPP SA5-specified containment rules and their specified cardinality shall still be followed. As an example, `ManagementNode` (or its subclasses) shall be contained under `SubNetwork` (or its subclasses). Also, in Rel-4, there may only be 0 or 1 `ManagementNode` (or its subclasses) contained under `SubNetwork` (or its subclasses).

Managed Object Instances may be instantiated as CORBA objects. This requires that the MOCs be represented in IDL. 3GPP SA5's NRM MOCs are not currently specified in IDL, but may be specified in IDL for instantiation or subclassing purposes. However, management information models should not require that IRPManagers access the instantiated managed objects other than through supported methods in the present document (3GPP TS 32.622-3).

Extension rules related to notifications (Notification categories, Event Types, Extended Event Types etc.) are for further study.

6.2 Extensions not allowed

The IDL specifications in the present document cannot be edited or altered. Any additional IDL specifications shall be specified in separate IDL files.

IDL interfaces (note: not MOCs) specified in the present document may not be subclassed or extended. New interfaces may be defined with vendor-specific methods.

Annex A (normative): CORBA IDL, NRM Definitions

```
#ifndef UtranNetworkResourcesNRMDefs_idl
#define UtranNetworkResourcesNRMDefs_idl

#pragma prefix "3gppsa5.org"

/**
 * This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
 */
module UtranNetworkResourcesNRMDefs
{




      /**
       *  Definitions for MO class RncFunction
       */
      interface RncFunction
      {
         const string CLASS = "RncFunction";

         // Attribute Names
         //
         const string rncFunctionId = "rncFunctionId";
         const string userLabel = "userLabel";
         const string mcc= "mcc";
         const string mnc= "mnc";
         const string rncId= "rncId";
      };


      /**
       *  Definitions for MO class UtranCell
       */
      interface UtranCell
      {
         const string CLASS = "UtranCell";

         // Attribute Names
         //
         const string utranCellId = "utranCellId";
         const string userLabel = "userLabel";
         const string utranCellIubLink = "utranCellIubLink";
         const string cId= "cId";
         const string localCellId= "localCellId";
         const string uarfcnUl= "uarfcnUl";
         const string uarfcnDl= "uarfcnDl";
         const string primaryScramblingCode= "primaryScramblingCode";
         const string primaryCpichPower= "primaryCpichPower";
         const string maximumTransmissionPower= "maximumTransmissionPower";
         const string primarySchPower= "primarySchPower";
         const string secondarySchPower= "secondarySchPower";
         const string bchPower= "bchPower";
         const string lac= "lac";
         const string rac= "rac";
         const string sac= "sac";
```

```
         const string ura= "ura";

      };



      /**
       *  Definitions for MO class NodeBFunction
       */
      interface NodeBFunction
      {
         const string CLASS = "NodeBFunction";

         // Attribute Names
         //
         const string nodeBFunctionId = "nodeBFunctionId";
         const string userLabel = "userLabel";
         const string nodeBFunctionIubLink = "nodeBFunctionIubLink";
      };


      /**
       *  Definitions for MO class IubLink
       */
      interface IubLink
      {
         const string CLASS = "IubLink";

         // Attribute Names
         //
         const string iubLinkId = "iubLinkId";
         const string userLabel = "userLabel";
         const string iubLinkNodeBFunction = "iubLinkNodeBFunction";
         const string iubLinkUtranCell = "iubLinkUtranCell";

      };

};


      /**
       *  Definitions for MO class UtranRelation
       */
      interface UtranRelation
      {
         const string CLASS = "UtranRelation";

         // Attribute Names
         //
         const string utranRelationId = "utranRelationId";
         const string relationType = "relationType";
         const string adjacentCell = "adjacentCell";
         const string uarfcnUl= "uarfcnUl";
         const string uarfcnDl= "uarfcnDl";
         const string primaryScramblingCode= "primaryScramblingCode";
         const string primaryCpichPower= "primaryCpichPower";
         const string lac= "lac";
};


/**
       *  Definitions for MO class ExternalUtranCell
       */
```

```
      interface ExternalUtranCell
      {
         const string CLASS = "ExternalUtranCell";

         // Attribute Names
         //
         const string externalUtranCellId = "externalUtranCellId";
         const string userLabel = "userLabel";
         const string cId= "cId";
         const string mcc= "mcc";
         const string mnc= "mnc";
         const string rncId= "rncId";
         const string uarfcnUl= "uarfcnUl";
         const string uarfcnDl= "uarfcnDl";
         const string primaryScramblingCode= "primaryScramblingCode";
         const string primaryCpichPower= "primaryCpichPower";
         const string lac= "lac";
         const string rac= "rac";

      };


#endif
```

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jun 2001	S_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Dec 2001	S_14	SP-010646	001	--	Change type "integer" to "long" in the UTRAN Network Resources IRP: CORBA SS	4.0.0	4.1.0

History

Document history		
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