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Technical Specification

Universal Mobile Telecommunications System (UMTS);
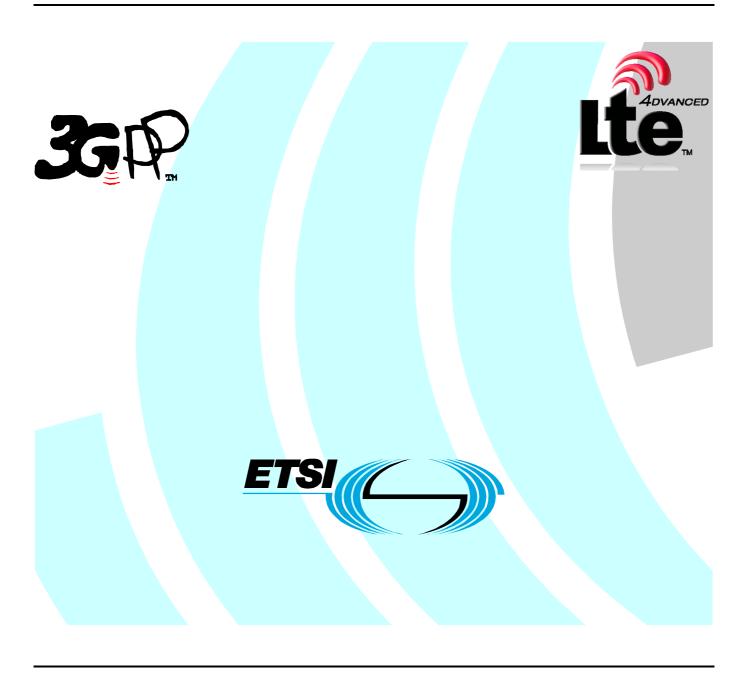**LTE;**
Telecommunication management;
Evolved Universal Terrestrial Radio Access Network (E-UTRAN)
Network Resource Model (NRM)
Integration Reference Point (IRP);
Solution Set (SS) definitions
(3GPP TS 32.766 version 10.3.0 Release 10)

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Foreword

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Contents

Foreword

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Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

TS 32.761 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements

TS 32.762 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)

TS 32.766 Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

1 Scope

The present document is part of an Integration Reference Point (IRP) named E-UTRAN Network Resource Model (NRM) IRP, through which an `IRPAgent` can communicate configuration management information to one or several `IRPManagers` concerning E-UTRAN resources. The E-UTRAN NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies the Solution Sets for the E-UTRAN NRM IRP.

This Solution Set specification is related to 3GPP TS 32.762 V10.3.X [4].

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 21.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 32.153: "Telecommunication management; Integration Reference Point (IRP) technology specific templates, rules and guidelines".

[3]   3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[4]   3GPP TS 32.762: " Telecommunications management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[5]   3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[6]   3GPP TS 32.606: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[7]   3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Solution Set (SS) definitions".

[8]   W3C REC-xml-20001006: "Extensible Markup Language (XML) 1.0 (Second Edition)".

[9]   W3C REC-xmlschema-0-20010502: "XML Schema Part 0: Primer".

[10]   W3C REC-xmlschema-1-20010502: "XML Schema Part 1: Structures".

[11]   W3C REC-xmlschema-2-20010502: "XML Schema Part 2: Datatypes".

[12]   W3C REC-xml-names-19990114: "Namespaces in XML".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1], TS 32.600 [3] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

XML file: file containing an XML document

XML document: composed of the succession of an optional XML declaration followed by a root XML element

> NOTE: See [8]; in the scope of the present document.

XML declaration: it specifies the version of XML being used

> NOTE: See [8].

XML element: has a type, is identified by a name, may have a set of XML attribute specifications and is either composed of the succession of an XML start-tag followed by the XML content of the XML element followed by an XML end-tag, or composed simply of an XML empty-element tag; each XML element may contain other XML elements

> NOTE: See [8].

empty XML element: having an empty XML content; an empty XML element still possibly has a set of XML attribute specifications; an empty XML element is either composed of the succession of an XML start-tag directly followed by an XML end-tag, or composed simply of an XML empty-element tag

> NOTE: See [8].

XML content (of an XML element): empty if the XML element is simply composed of an XML empty-element tag; otherwise the part, possibly empty, of the XML element between its XML start-tag and its XML end-tag

XML start-tag: the beginning of a non-empty XML element is marked by an XML start-tag containing the name and the set of XML attribute specifications of the XML element

> NOTE: See [8].

XML end-tag: the end of a non-empty XML element is marked by an XML end-tag containing the name of the XML element

> NOTE: See [8].

XML empty-element tag: composed simply of an empty-element tag containing the name and the set of XML attribute specifications of the XML element.

> NOTE: See [8].

XML attribute specification: has a name and a value

> NOTE: See [8].

DTD: defines structure and content constraints to be respected by an XML document to be valid with regard to this DTD

> NOTE: See [8].

XML schema: more powerful than a DTD, an XML schema defines structure and content constraints to be respected by an XML document to conform with this XML schema; through the use of XML namespaces several XML schemas can be used together by a single XML document; an XML schema is itself also an XML document that shall conform with the XML schema for XML schemas

> NOTE: See [9], [10] and [11].

XML namespace: enables qualifying element and attribute names used in XML documents by associating them with namespaces identified by different XML schemas

NOTE: See [12], in the scope of the present document.

XML complex type: defined in an XML schema; cannot be directly used in an XML document; can be the concrete type or the derivation base type for an XML element type or for another XML complex type; ultimately defines constraints for an XML element on its XML attribute specifications and/or its XML content

NOTE: See [9], [10] and [11].

XML element type: declared by an XML schema; can be directly used in an XML document; as the concrete type of an XML element, directly or indirectly defines constraints on its XML attribute specifications and/or its XML content; can also be the concrete type or the derivation base type for another XML element type

NOTE: See [9], [10] and [11].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1], TS 32.600 [3], and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

CM	Configuration Management
CORBA	Common Object Request Broker Architecture
DN	Distinguished Name
DTD	Document Type Definition
EDGE	Enhanced Data for GSM Evolution
GERAN	GSM/EDGE Radio Access Network
GSM	Global System for Mobile communication
IS	Information Service
IDL	Interface Definition Language (OMG)
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service
MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
OMG	Object Management Group
SS	Solution Set
UMTS	Universal Mobile Telecommunications System
UTRAN	Universal Terrestrial Radio Access Network
XML	eXtensible Markup Language
XSD	XML Schema Definition

4 Solution Set Definitions

This specification defines the following 3GPP E-UTRAN NRM IRP Solution Set Definitions:

- 3GPP E-UTRAN NRM IRP CORBA SS (Annex A)

- 3GPP E-UTRAN NRM IRP XML Definitions (Annex B)

Annex A (normative): CORBA Solution Set

This annex contains the CORBA Solution Set for the IRP whose semantics is specified in E-UTRAN NRM IRP: Information Service (TS 32.762 [4]).

A.1 Architectural features

The overall architectural feature of E-UTRAN Network Resources IRP is specified in 3GPP TS 32.762 [4]. This clause specifies features that are specific to the CORBA SS.

A.1.1 Syntax for Distinguished Names

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [5].

A.1.2 Rules for NRM extensions

This clause discusses how the models and IDL definitions provided in the present document can be extended for a particular implementation and still remain compliant with 3GPP SA5's specifications (see also Annex B of TS 32.153 [2].).

A.1.2.1 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).

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.

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

A.1.2.2 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.

A.2 Mapping

A.2.1 General mapping

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.

A.2.2 Information Object Class (IOC) mapping

This Solution Set supports reference attributes for relations other than containment relations between objects. Reference attributes are therefore introduced in each MOC where needed.

A.2.2.1 IOC ENBFunction

Mapping from NRM IOC ENBFunction attributes and associations to SS equivalent MOC ENBFunction attributes

Attribute of IOC ENBFunction in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
eNBId	eNBId	unsignedLong	M	M	-
x2BlackList	x2BlackList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	CM	M	M
x2WhiteList	x2WhiteList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	CM	M	M
x2HOBlackList	x2HOBlackList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	CM	M	M
x2IpAddressList	x2IpAddressList	genericEUTRANNRMAttributeTypes:: ipAddressListType	O	M	-
Note: For all conditional qualifiers, see attribute constraints in 32.762 [4]					

A.2.2.2   IOC EUtranGenericCell

Mapping from NRM IOC EUtranGenericCell attributes and associations to SS equivalent MOC EUtranGenericCell attributes

Attribute of IOC EUtranGenericCell in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
cellLocalId	cellLocalId	unsignedShort	M	M	M
cellSize	cellSize	genericEUTRANNRMAttributeTypes:: cellSizeEnumType	M	M	M
plmnIdList	plmnIdList Note: the first plmnId in the SS attribute plmnIdList is the primary PLMN id	genericEUTRANNRMAttributeTypes:: plmnIdListType	M	M	M
tac	tac	long	M	M	M
pci	pci	short	M	M	CM
pciList	pciList	genericEUTRANNRMAttributeTypes:: pciListType	CM	M	M
maximumTransmissionPower	maximumTransmissionPower	short	M	M	CM
referenceSignalPower	referenceSignalPower	short	M	M	M
pb	pb	short	M	M	M
partOfSectorPower	partOfSectorPower	short	CM	M	M
relatedTmaList	relatedTmaList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	CO	M	-
relatedAntennaList	relatedAntennaList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	CO	M	-
relatedSector	relatedSector	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference	CM	M	-
operationalState	operationalState	StateManagementIRPOptConstDefs:: OperationalStateTypeOpt	O	M	_
administrativeState	administrativeState	StateManagementIRPOptConstDefs:: AdministrativeStateTypeOpt	O	M	M
availabilityStatus	availabilityStatus	StateManagementIRPOptConstDefs:: AvailabilityStatusTypeOpt	O	M	-
cellResvInfo	cellResvInfo	genericEUTRANNRMAttributeTypes:: cellResvInfoType	CM	M	M
allowedAccessClasses	allowedAccessClasses	genericEUTRANNRMAttributeTypes:: allowedAccessEnumClassesType	M	M	M
isChangeForEnergySavingAllowed	isChangeForEnergySavingAllowed	GenericNetworkResourcesIRPSystem:: AttributeTypes::yesNoType	CM	M	M
tceIDMappingInfoList	tceIDMappingInfoList	genericEUTRANNRMAttributeTypes:: TceIDMappingInfoListType	CM	M	M
Note: For all conditional qualifiers, see attribute constraints in 32.762 [4]					

A.2.2.3 IOC ExternalEUtranGenericCell

Mapping from NRM IOC ExternalEUtranGenericCell attributes and associations to SS equivalent MOC ExternalEUtranGenericCell attributes

Attribute of IOC ExternalEUtranGenericCell in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
`id`	`id`	string	M	M	-
`pci`	`pci`	short	M	M	M
`plmnIdList`	`plmnIdList` Note: the first plmnId in the SS attribute `plmnIdList` is the primary PLMN id	genericEUTRANNRMAttributeTypes:: plmnIdListType	M	M	M
`cellLocalId`	`cellLocalId`	unsignedShort	M	M	M
`eNBId`	`eNBId`	unsignedLong	CM	M	M

A.2.2.4 IOC EUtranCellFDD

Mapping from NRM IOC EUtranCellFDD attributes and associations to SS equivalent MOC EUtranCellFDD attributes

Attribute of IOC EUtranCellFDD in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
`earfcnDl`	`earfcnDl`	short	M	M	M
`earfcnUl`	`earfcnUl`	short	M	M	M

A.2.2.5 IOC ExternalEUtranCellFDD

Mapping from NRM IOC ExternalEUtranCellFDD attributes and associations to SS equivalent MOC ExternalEUtranCellFDD attributes

Attribute of IOC ExternalEUtranCellFDD in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
`earfcnDl`	`earfcnDl`	short	M	M	M
`earfcnUl`	`earfcnUl`	short	M	M	M

A.2.2.6   IOC EUtranRelation

Mapping from NRM IOC EUtranRelation attributes and associations to SS equivalent MOC EUtranRelation attributes

Attribute of IOC EUtranRelation in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Writ Qualif
id	id	string	M	M	-
tCI	tCI	long	O	M	M
isRemoveAllowed	isRemoveAllowed	boolean	CM	M	M
isHOAllowed	isHOAllowed	boolean	CM	M	M
adjacentCell	adjacentCell	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference	M	M	M
isICICInformationSendAllowed	isICICInformationSendAllowed	boolean	CM	M	M
isLBAllowed	isLBAllowed	boolean	CM	M	M
isESCoveredBy	isESCoveredBy	genericEUTRANNRMAttributeTypes::IsEsCoveredByEnumType	CM	M	M
NOTE: For all conditional qualifiers, see attribute constraints in 32.762 [4]					

A.2.2.7   IOC Link_ENB_ENB

Mapping from NRM IOC Link_ENB_ENB attributes and associations to SS equivalent MOC Link_ENB_ENB attributes

Attribute of IOC Link_ENB_ENB in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier

A.2.2.8   IOC Cdma2000Relation

Mapping from NRM IOC Cdma2000Relation attributes and associations to SS equivalent MOC Cdma2000Relation attributes

Attribute of IOC Cdma2000Relation in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
adjacentSector	adjacentSector	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference	M	M	-

A.2.2.9   Void

A.2.2.10 IOC ExternalENBFunction

Mapping from NRM IOC ExternalENBFunction attributes and associations to SS equivalent MOC ExternalENBFunction attributes

Attribute of IOC ExternalENBFunction in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
eNBId	eNBId	unsignedLong	M	M	-

A.2.2.11 IOC EUtranCellTDD

Mapping from NRM IOC EUtranCellTDD attributes and associations to SS equivalent MOC EUtranCellTDD attributes

Attribute of IOC EUtranCellTDD in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
earfcn	earfcn	short	M	M	M
sfAssignment	sfAssignment	short	M	M	M
specialSfPatterns	specialSfPatterns	short	M	M	M

A.2.2.12 IOC ExternalEUtranCellTDD

Mapping from NRM IOC ExternalEUtranCellTDD attributes and associations to SS equivalent MOC ExternalEUtranCellTDD attributes

Attribute of IOC ExternalEUtranCellTDD in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
earfcn	earfcn	short	M	M	M

A.2.2.13 IOC MCEFunction

Attribute of IOC MCEFunction in 3GPP TS 32.762 [2]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-

A.2.2.14 IOC MBSFNArea

Attribute of IOC MBSFNArea in 3GPP TS 32.762 [2]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
mbsfnAreaId	mbsfnAreaId	short	M	M	M
cellIdList	cellIdList	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	M	M	M

A.2.2.15 IOC RNFunction

Mapping from NRM IOC RNFunction attributes and associations to SS equivalent MOC RNFunction attributes

Attribute of IOC RNFunction in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
servingCell	servingCell	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReference	M	M	M
candidateDeNBCells	candidateDeNBCells	genericEUTRANNRMAttributeTypes:: EcgiListType	M	M	M

Editor's note: the need of attribute candidateDeNBCells is for FFS.

A.2.2.16 IOC DeNBCapability

Mapping from NRM IOC DeNBCapabilityattributes and associations to SS equivalent MOC DeNBCapabilityattributes

Attribute of IOC DeNBCapabilityin 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
servedRN	servedRN	GenericNetworkResourcesIRPSystem:: AttributeTypes::MOReferenceSet	M	M	M
maxNbrRNAllowed	maxNbrRNAllowed	unsignedShort	M	M	M

A.2.2.17 IOC ExternalRNFunction

Mapping from NRM IOC ExternalRNFunction attributes and associations to SS equivalent MOC ExternalRNFunction attributes

Attribute of IOC RNFunction in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-

A.2.2.18 Void

A.2.2.19 IOC QciDscpMapping

Mapping from NRM IOC QciDscpMapping attributes and associations to SS equivalent MOC QciDscpMapping attributes

Attribute of IOC RNFunction in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
id	id	string	M	M	-
qciDscpMappingList	qciDscpMappingList	genericEUTRANNRMAttributeTypes:: qciDscpMappingListType	M	M	M

A.2.2.20 IOC EnergySavingProperties

Mapping from NRM IOC EnergySavingPropoerties attributes and associations to SS equivalent MOC ExternaID EnergySavingPropoerties attributes

Attribute of IOC EnergySavingPropoerties in 3GPP TS 32.762 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
energySavingState	energySavingState	genericEUTRANNRMAttributeTypes::EnergySavingStateEnumType	M	M	-
energySavingControl	energySavingControl	genericEUTRANNRMAttributeTypes::EnergySavingControlEnumType	CM	M	M

A.2.2.21 IOC CellOutageCompensationInformation

Attribute of IOC SONTargets in 3GPP TS 32.522 [4]	SS Attribute	SS Type	Support Qualifier	Read Qualifier	Write Qualifier
cOCStatus	cellOutageCompensationStatus	GenericSONPolicyNRMAttributeTypes:: cellOutageCompensationStatus	M	M	-
isCOCAllowed	isCOCAllowed	Boolean	M	M	M

A.3 Solution Set definitions

A.3.1 IDL definition structure

Clause A.3.2 defines the MO classes for the E-UTRAN NRM IRP.

A.3.2 IDL specification "EUtranNetworkResourcesNRMDefs.idl"

```
//File:EUtranNetworkResourcesNRMDefs.idl
#ifndef _EUTRANNETWORKRESOURCESNRMDEFS_IDL_
#define _EUTRANNETWORKRESOURCESNRMDEFS_IDL_
#include "GenericNetworkResourcesNRMDefs.idl"
#include "EPCResourcesNRMDefs.idl"
#pragma prefix "3gppsa5.org"
/**
 * This module defines constants for each MO class name and
 * the attribute names for each defined MO class.
 */
module EUtranNetworkResourcesNRMDefs
{
    /*
     * Definitions for MO class ENBFunction
     */
    interface ENBFunction: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "ENBFunction";
        // Attribute Names
        //
        const string id= "id";
        const string eNBId = "eNBId";
        const string x2BlackList= "x2BlackList";
        const string x2WhiteList= "x2WhiteList";
        const string x2HOBlackList= "x2HOBlackList";
        const string x2IpAddressList= "x2IpAddressList";
        const string tceIDMappingInfoList= "tceIDMappingInfoList";

    };
    /*
     * Definitions for MO class RNFunction
     */
    interface RNFunction: ENBFunction
    {
        const string CLASS = "RNFunction";
        // Attribute Names
        //
        const string servingCell = "servingCell";
        const string candidateDeNBCells = "candidateDeNBCells";
    };

    /*
     * Definitions for MO class DeNBCapability
     */
    interface DeNBCapability: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "DeNBCapability";
        // Attribute Names
        //
        const string id= "id";
        const string servedRN= "servedRN";
        const string maxNbrRNAllowed= "maxNbrRNAllowed";
    };
    /*
     * Definitions for MO class ExternalRNFunction
     */
    interface ExternalRNFunction: ExternalENBFunction
    {
        const string CLASS = "ExternalRNFunction";
        // Attribute Names
        //
    };
```

```
    /*

    /*
     * Definitions for MO class EUtranGenericCell
     */
    interface EUtranGenericCell: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "EUtranGenericCell";
        // Attribute Names
        //
        const string id = "id";
        const string cellLocalId = "cellLocalId";
        const string cellSize = "cellSize";
        const string plmnIdList = "plmnIdList";
        const string tac = "tac";
        const string pci = "pci";
        const string pciList = "pciList";
        const string operationalState = "operationalState";
        const string administrativeState = "administrativeState";
        const string availabilityStatus = "availabilityStatus";
        const string maximumTransmissionPower = "maximumTransmissionPower";
        const string referenceSignalPower = "referenceSignalPower";
        const string pb = "pb";
        const string partOfSectorPower = "partOfSectorPower";
        const string relatedTmaList = "relatedTmaList";
        const string relatedAntennaList = "relatedAntennaList";
        const string relatedSectorEquipment = "relatedSectorEquipment";
        const string allowedAccessClasses = "allowedAccessClasses";
        const string isChangeForEnergySavingAllowed = "isChangeForEnergySavingAllowed";
    };


    /*
     * Definitions for MO class ExternalEUtranGenericCell
     */
    interface ExternalEUtranGenericCell: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "ExternalEUtranGenericCell";
        // Attribute Names
        //
        const string id= "id";
        const string pci= "pci";
        const string plmnIdList = "plmnIdList";
        const string cellLocalId = "cellLocalId";
        const string eNBId = "eNBId";
    };


    /*
     * Definitions for MO class EUtranCellFDD
     */
    interface EUtranCellFDD: EUtranGenericCell
    {
        const string CLASS = "EUtranCellFDD";
        // Attribute Names
        //
        const string earfcnDl = "earfcnDl";
        const string earfcnUl = "earfcnUl";
    };


    /*
     * Definitions for MO class ExternalEUtranCellFDD
     */
    interface ExternalEUtranCellFDD: ExternalEUtranGenericCell
    {
        const string CLASS = "ExternalEUtranCellFDD";
        // Attribute Names
        //
        const string earfcnDl = "earfcnDl";
        const string earfcnUl = "earfcnUl";
    };

/*
     * Definitions for MO class EUtranCellTDD
     */
    interface EUtranCellTDD: EUtranGenericCell
    {
```

```
            const string CLASS = "EUtranCellTDD";
            // Attribute Names
            //
            const string earfcn = "earfcn";
            const string sfAssignment = "sfAssignment";
            const string specialSfPatterns = "specialSfPatterns";

    };
/*
     * Definitions for MO class ExternalEUtranCellTDD
     */
    interface ExternalEUtranCellTDD: ExternalEUtranGenericCell
    {
            const string CLASS = "ExternalEUtranCellTDD";
            // Attribute Names
            //
            const string earfcn = "earfcn";

    };


    /*
     * Definitions for MO class EUtranRelation
     */
    interface EUtranRelation: GenericNetworkResourcesNRMDefs::Top
    {
            const string CLASS = "EUtranRelation";
            // Attribute Names
            //
            const string id= "id";
            const string tCI = "tCI";
            const string isRemoveAllowed = "isRemoveAllowed";
            const string isHOAllowed = "isHOAllowed";
            const string adjacentCell = "adjacentCell";
            const string isICICInformationSendAllowed = "isICICInformationSendAllowed";
            const string isLBAllowed = "isLBAllowed";
    };


/*
     * Definitions for MO class Link_ENB_ENB
     */
    interface Link_ENB_ENB: GenericNetworkResourcesNRMDefs::Link
    {
            const string CLASS = "Link_ENB_ENB";
            // Attribute Names
            //

    };


/*
     * Definitions for MO class Cdma2000Relation
     */
    interface Cdma2000Relation:GenericNetworkResourcesNRMDefs::Top
    {
            const string CLASS = "Cdma2000Relation";
            // Attribute Names
            //
            const string id= "id";
            const string adjacentSector = "adjacentSector";

    };


/*
     * Definitions for MO class ExternalENBFunction
     */
    interface ExternalENBFunction: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
            const string CLASS = "ExternalENBFunction";
            // Attribute Names
            //
            const string id = "id";
            const string eNBId = "eNBId";

    };
```

```
/*
     * Definitions for MO class MCEFunction
     */
    interface MCEFunction: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "MCEFunction";
        // Attribute Names
        //
        const string id= "id";

    };

/*
     * Definitions for MO class Link_MCE_ENB
     */
    interface Link_MCE_ENB: GenericNetworkResourcesNRMDefs::Link
    {
        const string CLASS = "Link_MCE_ENB";
        // Attribute Names
        //

    };
/*
     * Definitions for MO class Link_MCE_MME
     */
    interface Link_MCE_MME: GenericNetworkResourcesNRMDefs::Link
    {
        const string CLASS = "Link_MCE_MME";
        // Attribute Names
        //

    };

/*
     * Definitions for MO class MBSFNArea
     */

    interface MBSFNArea: GenericNetworkResourcesNRMDefs::Top
    {
        const string CLASS = "MBSFNArea";
        // Attribute Names
        //
        const string id= "id";
        const string mbsfnAreaId= "mbsfnAreaId";
        const string cellIdList= "cellIdList";

    };

/*
     * Definitions for MO class QciDscpMapping
     */

    interface QciDscpMapping: GenericNetworkResourcesNRMDefs::ManagedFunction
    {
        const string CLASS = "QciDscpMapping";
        // Attribute Names
        //
        const string id= "id";
        const string qciDscpMappingList = "qciDscpMappingList";

    };

};

/*
     * Definitions for MO class EnergySavingProperties
     */

    interface EnergySavingProperties: GenericNetworkResourcesNRMDefs::Top
    {
        const string CLASS = "EnergySavingProperties";
        // Attribute Names
        //
        const string energySavingState= "energySavingState";
        const string energySavingControl= "energySavingControl";

    };
```

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```
    /*
     * Definitions for MO class CellOutageCompensationInformation
     */
    interface CellOutageCompensationInformation: GenericNetworkResourcesNRMDefs::Top
    {
        const string CLASS = "CellOutageCompensationInformation";
        // Attribute Names
        //
        const string cellOutageCompensationStatus = "cellOutageCompensationStatus";
        const string isCOCAllowed =
            "isCOCAllowed";
    };


module genericEUTRANNRMAttributeTypes
{

    enum CellSizeEnumType
    {
        verysmall,
        small,
        medium,
        large
    };

    enum AllowedAccessClassesValues
    {
    EmergencyCall,
    ForPLMNUse,
    SecurityServices,
    PublicUtilities,
    EmergencyServices,
    PLMNStaff
    };
    typedef sequence < AllowedAccessClassesValues,6> AllowedAccessClasses


    struct PlmnIdType
    {
        short mcc;
        short mnc;
    };
    const short PLMNID_LIST_LENGTH = 6;
    typedef sequence<PlmnIdType > plmnIdListType;

    const short NO_OF_PCIS = 504;
    typedef sequence<short,NO_OF_PCIS> pciListType;

    typedef sequence<string> ipAddressListType;

    enum CellResvInfoType
    {
        reservedCell,
        nonReservedCell
    };

    struct QciDscpMappingType
    {
        short qci;
        short dscp;
    };

    typedef sequence<QciDscpMappingType> QciDscpMappingListType;

    struct EcgiType
    {
        short mcc;
        short mnc;
        unsignedlong eci
    };
    typedef sequence <EcgiType> EcgiListType;

  enum isEsCoveredByEnumType
    {
    no,
    partial,
```

```
   yes
  };

  enum yesNoType
    {
    no,
    yes
  };

  enum energySavingStateEnumType
    {
    isEnergySaving,
    isNotEnergySaving
  };

  enum energySavingControlEnumType
    {
    toBeEnergySaving,
    toBeNotEnergySaving
  };

    struct TceIDMappingInfo
    {
        short tceID;
        string tceIPAddr;
    };
    typedef sequence<TceIDMappingInfo> TceIDMappingInfoListType;

enum CellOutageCompensationState
{
   cOCActivating,
   cOCActive,
   cOCDeactivating,
   cOCDeactive
};

    typedef sequence<string> DnList;

struct CellOutageCompensationStatus
    {
    CellOutageCompensationState cellOutageCompensationState;
    DnList errorList;
    };


};

#endif // _EUTRANNETWORKRESOURCESNRMDEFS_IDL_
```

Annex B (normative): XML Definitions

This annex contains the XML Definitions for the E-UTRAN NRM IRP as it applies to Itf-N, in accordance with UTRAN NRM IRP IS definitions [4].

B.1 Architectural features

The overall architectural feature of E-UTRAN Network Resources IRP is specified in 3GPP TS 32.762 [4]. This clause specifies features that are specific to the Schema definitions.

The XML definitions of this document specify the schema for a configuration content.

When using the XML definitions for a configuration file transfer with the Bulk CM IRP, using either CORBA Solution Set of 3GPP TS 32.616 [7] or SOAP Solution Set of 3GPP TS 32.616 [7], the basic part of the XML file format definition is provided by 3GPP TS 32.616 [7]. The XML definitions of this document provide the schema for the configuration content to be included in such a configuration file.

When using the XML definitions with a SOAP Solution Set of any Interface IRP that perform operations on managed objects, for example the Basic CM IRP SOAP SS of 3GPP TS 32.606 [6], the XML definitions of this document provides the schema for the configuration content operated on by the interface IRP. Such configuration content can be name of managed object and, if applicable, IOC attributes.

B.1.1 Syntax for Distinguished Names

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [5].

B.2 Mapping

B.2.1 General mapping

An IOC maps to an XML element of the same name as the IOC's name in the IS. An IOC attribute maps to a sub-element of the corresponding IOC's XML element, and the name of this sub-element is the same as the attribute's name in the IS.

B.2.2 Information Object Class (IOC) mapping

Not present in the current version of this specification.

B.3 Solution Set definitions

B.3.1 XML definition structure

The overall description of the file format of configuration data XML files is provided by 3GPP TS 32.616 [7].

Annex B.3.3 of the present document defines the NRM-specific XML schema `eutranNrm.xsd` for the E-UTRAN Network Resources IRP NRM defined in 3GPP TS 32.762 [4].

XML schema `eutranNrm.xsd` explicitly declares NRM-specific XML element types for the related NRM.

The definition of those NRM-specific XML element types complies with the generic mapping rules defined in 3GPP TS 32.616 [7].

B.3.2 Graphical Representation

Not present in the current version of this specification.

B.3.3 XML schema "eutranNrm.xsd"

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
  3GPP TS 32.766 E-UTRAN Network Resource Model IRP
  XML schema definition
  eutranNrm.xsd
-->
<schema xmlns="http://www.w3.org/2001/XMLSchema"
xmlns:xn="http://www.3gpp.org/ftp/specs/archive/32_series/32.626#genericNrm"
xmlns:en="http://www.3gpp.org/ftp/specs/archive/32_series/32.766#eutranNrm"
xmlns:epc="http://www.3gpp.org/ftp/specs/archive/32_series/32.756#epcNrm"
xmlns:un="http://www.3gpp.org/ftp/specs/archive/32_series/32.646#utranNrm"
xmlns:gn="http://www.3gpp.org/ftp/specs/archive/32_series/32.656#geranNrm"
xmlns:sm="http://www.3gpp.org/ftp/specs/archive/32_series/32.676#stateManagementIRP"
xmlns:sp="http://www.3gpp.org/ftp/specs/archive/32_series/32.526#sonPolicyNrm"
targetNamespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.766#eutranNrm"
elementFormDefault="qualified">
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.626#genericNrm"/>
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.756#epcNrm"/>
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.646#utranNrm"/>
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.656#geranNrm"/>
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.676#stateManagementIRP"/>
  <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.526#sonPolicyNrm"/>
  <complexType name="IpAddressList">
    <sequence>
      <element name="ipAddress" type="string" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
  </complexType>
  <simpleType name="EnbId">
    <restriction base="unsignedLong">
      <maxInclusive value="268435455"/>
    </restriction>
  </simpleType>
  <simpleType name="Eci">
    <restriction base="unsignedLong">
      <maxInclusive value="268435455"/>
    </restriction>
  </simpleType>  <simpleType name="CellLocalId">
    <restriction base="unsignedShort">
      <maxInclusive value="255"/>
    </restriction>
  </simpleType>
  <simpleType name="cellSize">
    <restriction base="string">
      <enumeration value="verysmall"/>
      <enumeration value="small"/>
      <enumeration value="medium"/>
      <enumeration value="large"/>
    </restriction>
  </simpleType>
  <simpleType name="allowedAccessClassesElementType">
    <restriction base="string">
      <enumeration value="EmergencyCall"/>
      <enumeration value="ForPLMNUse"/>
      <enumeration value="SecurityServices"/>
      <enumeration value="PublicUtilities"/>
      <enumeration value="EmergencyServices"/>
      <enumeration value="PLMNStaff"/>
    </restriction>
</simpleType>
  <complexType name="allowedAccessClassesType">
    <sequence minOccurs="0" maxOccurs="6">
      <element name="allowedAccessClassesElement" type="en:allowedAccessClassesElementType"/>
    </sequence>
  </complexType>
  <complexType name="PLMNId">
    <sequence>
      <element name="mcc" type="short"/>
      <element name="mnc" type="short"/>
    </sequence>
  </complexType>
  <complexType name="PLMNIdList">
    <sequence>
      <element name="pLMNId" type="en:PLMNId" maxOccurs="6"/>
      <!-- The first pLMNId of the pLMNIdList is primary PLMN id -->
```

```xml
    </sequence>
  <complexType name="EcgiList">
   <sequence>
     <element name="plmnId" type="en:PLMNId" minOccurs="0"/>
     <element name="eci" type="en:Eci" minOccurs="0"/>
   </sequence>
  </complexType>
 </complexType>
 <simpleType name="Pci">
   <restriction base="unsignedShort">
    <maxInclusive value="503"/>
    <!-- Minimum value is 0, maximum value is 3x167+2=503 -->
   </restriction>
 </simpleType>
 <complexType name="PciList">
   <sequence>
     <element name="pci" type="en:Pci" maxOccurs="504"/>
   </sequence>
 </complexType>
 <simpleType name="cellResvInfo">
   <restriction base="string">
     <enumeration value="reservedCell"/>
     <enumeration value="nonReservedCell"/>
   </restriction>
 </simpleType>
   <simpleType name="mbsfnAreaId">
    <restriction base="unsignedLong">
   <maxInclusive value="255"/>
    </restriction>
  </simpleType>
 <complexType name="QciDscpMappingType">
   <sequence>
     <element name="qci" type="short"/>
     <element name="dscp" type="short"/>
   </sequence>
 </complexType>
 <complexType name="QciDscpMappingListType">
   <sequence>
     <element name="QciDscpMappingPair" type="en:QciDscpMappingType"/>
   </sequence>
 </complexType>
 <simpleType name="isEsCoveredByEnumType">
   <restriction base="string">
     <enumeration value="no"/>
     <enumeration value="partial"/>
     <enumeration value="yes"/>
   </restriction>
 </simpleType>
 <simpleType name="energySavingStateEnumType">
   <restriction base="string">
     <enumeration value="isEnergySaving"/>
     <enumeration value="isNotEnergySaving"/>
   </restriction>
 </simpleType>
 <simpleType name="energySavingControlEnumType">
   <restriction base="string">
     <enumeration value="toBeEnergySaving"/>
     <enumeration value="toBeNotEnergySaving"/>
   </restriction>
 </simpleType>
 <simpleType name="yesNoType">
   <restriction base="string">
     <enumeration value="yes"/>
     <enumeration value="no"/>
   </restriction>
 </simpleType>
 <complexType name="TceIDMappingInfo">
   <sequence>
     <element name="tceID" type="short"/>
     <element name="tceIPAddr" type="string"/>
   </sequence>
 </complexType>
 <complexType name="TceIDMappingInfoList">
   <sequence>
     <element name="tceIDMappingInfo" type="en:TceIDMappingInfo" minOccurs="0"/>
   </sequence>
 </complexType>
 <simpleType name="cellOutageCompensationState">
```

```
  <restriction base="string">
    <enumeration value="cOCActivating"/>
    <enumeration value="cOCActive"/>
    <enumeration value="cOCDeactivating"/>
    <enumeration value="cOCDeactive"/>
  </restriction>
</simpleType>
<complexType name="cellOutageCompensationStatus">
  <sequence>
    <element name="cellOutageCompensationState" type="en:cellOutageCompensationState"/>
    <element name="errorList" type="xn:dnList"/>
  </sequence>
</complexType>
<element name="CellOutageCompensationInformation">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes">
            <complexType>
              <all>
                <element name="cellOutageCompensationStatus"
                         type="en:cellOutageCompensationStatus"/>
                <element name="isCOCAllowed" type="boolean"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>

<element name="ENBFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" type="string"/>
                <element name="enbId" type="en:EnbId" minOccurs="0"/>
                <element name="x2BlackList" type="xn:dnList" minOccurs="0"/>
                <element name="x2WhiteList" type="xn:dnList" minOccurs="0"/>
                <element name="x2HOBlackList" type="xn:dnList" minOccurs="0"/>
                <element name="x2IpAddressList" type="string" minOccurs="0"/>
                    <element name="tceIDMappingInfoList" type="en:TceIDMappingInfoList"
minOccurs="0"/>
                    <!-- linkList attribute is to be added when defined in the IS -->
                  </all>
              </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="en:EUtranCellFDD"/>
            <element ref="en:EUtranCellTDD"/>
            <element ref="epc:EP_RP_EPS"/>
            <element ref="en:ENBFunctionOptionallyContainedNrmClass"/>
            <element ref="en:DeNBCapability"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
          <choice minOccurs="0" maxOccurs="1">
            <element ref="sp:ESPolicies"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="RNFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" type="string"/>
```

```
              <element name="servingCell" type="xn:dn"/>
            </all>
          </complexType>
        </element>
        <choice minOccurs="0" maxOccurs="unbounded">
          <element ref="epc:EP_RP_EPS"/>
          <element ref="en:RNFunctionOptionallyContainedNrmClass"/>
          <element ref="xn:VsDataContainer"/>
        </choice>
      </sequence>
    </extension>
  </complexContent>
  </complexType>
</element>
<element name="DeNBCapability"
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" type="string"/>
                <element name="servedRN" type="xn:dnList" minOccurs="0"/>
                <element name="maxNbrRNAllowed" type="unsignedShort"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="ExternalRNFunction"
substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" type="string"/>
                <element name="candidateDeNBCells" type="en:EcgiList" minOccurs="0"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="epc:EP_RP_EPS"/>
            <element ref="en:ExternalRNFunctionOptionallyContainedNrmClass"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="ExternalENBFunction" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <element name="userLabel" type="string"/>
                <element name="enbId" type="en:EnbId" minOccurs="0"/>
                <!-- Attributes are to be added when defined in the IS -->
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="en:ExternalEUtranCellFDD"/>
            <element ref="en:ExternalEUtranCellTDD"/>
            <element ref="en:ExternalENBFunctionOptionallyContainedNrmClass"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
```

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```
            </extension>
          </complexContent>
        </complexType>
      </element>
      <element name="EUtranCellFDD">
        <complexType>
          <complexContent>
            <extension base="xn:NrmClass">
              <sequence>
                <element name="attributes" minOccurs="0">
                  <complexType>
                    <all>
                      <!-- Inherited attributes from EUtranGenericCell-->
                      <element name="userLabel" type="string"/>
                      <element name="cellLocalId" type="en:CellLocalId"/>
                      <element name="cellSize" type="en:cellSize"/>
                      <element name="pLMNIdList" type="en:PLMNIdList"/>
                      <element name="tac" type="long"/>
                      <element name="pci" type="en:Pci"/>
                      <element name="pciList" type="en:PciList" minOccurs="0"/>
                      <element name="maximumTransmissionPower" type="short"/>
                      <element name="partOfSectorPower" type="short" minOccurs="0"/>
                      <element name="referenceSignalPower" type="short"/>
                      <element name="pb" type="short"/>
                      <element name="relatedTmaList" type="xn:dnList" minOccurs="0"/>
                      <element name="relatedAntennaList" type="xn:dnList" minOccurs="0"/>
                      <element name="relatedSectorEquipment" type="xn:dn" minOccurs="0"/>
                      <element name="operationalState" type="sm:operationalStateType" minOccurs="0"/>
                      <element name="administrativeState" type="sm:administrativeStateType"
                              minOccurs="0"/>
                      <element name="availabilityStatus" type="sm:availabilityStatusType"
                              minOccurs="0"/>
                      <element name="allowedAccessClasses" type="en:allowedAccessClassesType"/>
                      <element name="cellResvInfo" type="en:cellResvInfoType" minOccurs="0"/>
                      <element name="isChangeForEnergySavingAllowed"
                              type="en:yesNoType" minOccurs="0"/>
                      <!-- End of inherited attributes from EUtranGenericCell -->
                      <element name="earfcnDl" type="short"/>
                      <element name="earfcnUl" type="short"/>
                    </all>
                  </complexType>
                </element>
                <choice minOccurs="0" maxOccurs="unbounded">
                  <element ref="en:EUtranRelation"/>
                  <element ref="en:Cdma2000Relation"/>
                  <element ref="gn:GsmRelation"/>
                  <element ref="un:UtranRelation"/>
                  <element ref="en:EUtranCellFDDOptionallyContainedNrmClass"/>
                  <element ref="xn:VsDataContainer"/>
                </choice>
                <choice minOccurs="0" maxOccurs="1">
                  <element ref="en:EnergySavingProperties"/>
                  <element ref="sp:ESPolicies"/>
                </choice>
              </sequence>
            </extension>
          </complexContent>
        </complexType>
      </element>
      <element name="ExternalEUtranCellFDD"
    substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
        <complexType>
          <complexContent>
            <extension base="xn:NrmClass">
              <sequence>
                <element name="attributes" minOccurs="0">
                  <complexType>
                    <all>
                      <!-- Inherited attributes from ExternalEUtranGenericCell-->
                      <element name="userLabel" type="string"/>
                      <element name="pci" type="en:Pci"/>
                      <element name="pLMNIdList" type="en:PLMNIdList"/>
                      <element name="cellLocalId" type="en:CellLocalId"/>
                      <element name="enbId" type="en:EnbId" minOccurs="0"/>
                      <!-- End of inherited attributes from ExternalEUtranGenericCell -->
                      <element name="earfcnDl" type="short"/>
                      <element name="earfcnUl" type="short"/>
                    </all>
```

```
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="en:ExternalEUtranCellFDDOptionallyContainedNrmClass"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
          <choice minOccurs="0">
            <element ref="en:CellOutageCompensationInformation"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="EUtranCellTDD">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
        <sequence>
          <element name="attributes" minOccurs="0">
            <complexType>
              <all>
                <!-- Inherited attributes from EUtranGenericCell-->
                <element name="userLabel" type="string"/>
                <element name="cellLocalId" type="en:CellLocalId"/>
                <element name="cellSize" type="en:cellSize"/>
                <element name="pLMNIdList" type="en:PLMNIdList"/>
                <element name="tac" type="long"/>
                <element name="pci" type="en:Pci" />
                <element name="pciList" type="en:PciList" minOccurs="0"/>
                <element name="maximumTransmissionPower" type="short"/>
                <element name="partOfSectorPower" type="short" minOccurs="0"/>
                <element name="referenceSignalPower" type="short"/>
                <element name="pb" type="short"/>
                <element name="relatedTmaList" type="xn:dnList" minOccurs="0"/>
                <element name="relatedAntennaList" type="xn:dnList" minOccurs="0"/>
                <element name="relatedSectorEquipment" type="xn:dn" minOccurs="0"/>
                <element name="operationalState" type="sm:operationalStateType" minOccurs="0"/>
                <element name="administrativeState" type="sm:administrativeStateType"
                          minOccurs="0"/>
                <element name="availabilityStatus" type="sm:availabilityStatusType"
                          minOccurs="0"/>
                <element name="allowedAccessClasses" type="en:allowedAccessClassesType"/>
                <element name="cellResvInfo" type="en:cellResvInfoType" minOccurs="0"/>
                   <element name="isChangeForEnergySavingAllowed"
                             type="en:yesNoType" minOccurs="0"/>
                <!-- End of inherited attributes from EUtranGenericCell -->
                  <element name="earfcn" type="short"/>
                  <element name="sfAssignment" type="short"/>
                <element name="specialSfPatterns" type="short"/>
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="en:EUtranRelation"/>
            <element ref="en:Cdma2000Relation"/>
            <element ref="gn:GsmRelation"/>
            <element ref="un:UtranRelation"/>
            <element ref="en:EUtranCellTDDOptionallyContainedNrmClass"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
          <choice minOccurs="0" maxOccurs="1">
            <element ref="en:EnergySavingProperties"/>
            <element ref="sp:ESPolicies"/>
          </choice>
          <choice minOccurs="0">
            <element ref="en:CellOutageCompensationInformation"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="ExternalEUtranCellTDD"
substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
  <complexType>
    <complexContent>
      <extension base="xn:NrmClass">
```

```
                <sequence>
                  <element name="attributes" minOccurs="0">
                    <complexType>
                      <all>
                        <!-- Inherited attributes from ExternalEUtranGenericCell-->
                        <element name="userLabel" type="string"/>
                        <element name="pci" type="en:Pci"/>
                        <element name="pLMNIdList" type="en:PLMNIdList"/>
                        <element name="cellLocalId" type="en:CellLocalId"/>
                        <element name="enbId" type="en:EnbId" minOccurs="0"/>
                        <!-- End of inherited attributes from ExternalEUtranGenericCell -->
                         <element name="earfcn" type="short"/>
                      </all>
                    </complexType>
                  </element>
                  <choice minOccurs="0" maxOccurs="unbounded">
                    <element ref="en:ExternalEUtranCellTDDOptionallyContainedNrmClass"/>
                    <element ref="xn:VsDataContainer"/>
                  </choice>
                </sequence>
              </extension>
            </complexContent>
          </complexType>
        </element>
        <element name="EUtranRelation">
          <complexType>
            <complexContent>
              <extension base="xn:NrmClass">
                <sequence>
                  <element name="attributes" minOccurs="0">
                    <complexType>
                      <all>
                        <element name="tCI" type="long" minOccurs="0"/>
                        <element name="isRemoveAllowed" type="boolean" minOccurs="0"/>
                        <element name="isHOAllowed" type="boolean" minOccurs="0"/>
                        <element name="isICICInformationSendAllowed" type="boolean" minOccurs="0"/>
                        <element name="isLBAllowed" type="boolean" minOccurs="0"/>
                        <element name="adjacentCell" type="xn:dn"/>
                        <element name="isEsCoveredBy" type="en:isEsCoveredByEnumType" minOccurs="0"/>
                      </all>
                    </complexType>
                  </element>
                  <choice minOccurs="0" maxOccurs="unbounded">
                    <element ref="en:EUtranRelationOptionallyContainedNrmClass"/>
                    <element ref="xn:VsDataContainer"/>
                  </choice>
                </sequence>
              </extension>
            </complexContent>
          </complexType>
        </element>
        <element name="Cdma2000Relation">
          <complexType>
            <complexContent>
              <extension base="xn:NrmClass">
                <sequence>
                  <element name="attributes" minOccurs="0">
                    <complexType>
                      <all>
                        <element name="adjacentSector" type="xn:dn"/>
                      </all>
                    </complexType>
                  </element>
                  <choice minOccurs="0" maxOccurs="unbounded">
                    <element ref="en:Cdma2000RelationOptionallyContainedNrmClass"/>
                    <element ref="xn:VsDataContainer"/>
                  </choice>
                </sequence>
              </extension>
            </complexContent>
          </complexType>
        </element>
        <element name="Link_ENB_ENB" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
          <complexType>
            <complexContent>
              <extension base="xn:NrmClass">
                <sequence>
                  <element name="attributes" minOccurs="0">
```

```
                  <complexType>
                    <all>
                      <!-- Inherited attributes from Link -->
                      <element name="aEnd" type="xn:dn"/>
                      <element name="linkType" type="xn:linkType" minOccurs="0"/>
                      <element name="protocolName" type="string" minOccurs="0"/>
                      <element name="protocolVersion" type="string" minOccurs="0"/>
                      <element name="userLabel" type="string"/>
                      <element name="zEnd" type="xn:dn"/>
                      <!-- End of inherited attributes from Link -->
                    </all>
                  </complexType>
                </element>
                <choice minOccurs="0" maxOccurs="unbounded">
                 <element ref="en:Link_ENB_ENBOptionallyContainedNrmClass"/>
                 <element ref="xn:VsDataContainer"/>
                </choice>
              </sequence>
            </extension>
          </complexContent>
        </complexType>
      </element>
      <element name="MCEFunction" substitutionGroup="xn:ManagedElementOptionallyContainedNrmClass">
        <complexType>
          <complexContent>
            <extension base="xn:NrmClass">
              <sequence>
                <element name="attributes" minOccurs="0">
                  <complexType>
                    <all>
                      <element name="userLabel" type="string" minOccurs="0"/>
                        <!-- Attributes are to be added when defined in the IS -->
                    </all>
                  </complexType>
                </element>
                <choice minOccurs="0" maxOccurs="unbounded">
                 <element ref="en:MCEFunctionOptionallyContainedNrmClass"/>
                      <element ref="en:MBSFNArea"/>
                 <element ref="xn:VsDataContainer"/>
                </choice>
              </sequence>
            </extension>
          </complexContent>
        </complexType>
      </element>
      <element name="MBSFNArea" >
        <complexType>
          <complexContent>
            <extension base="xn:NrmClass">
              <sequence>
                <element name="attributes" minOccurs="0">
                  <complexType>
                    <all>
                      <element name="mbsfnAreaId" type="en:mbsfnAreaIdType" minOccurs="0"/>
                      <element name="cellIdList" type="xn:dnList" minOccurs="0"/>
                    </all>
                  </complexType>
                </element>
                <choice minOccurs="0" maxOccurs="unbounded">
                 <element ref="en:MBSFNAreaOptionallyContainedNrmClass"/>
                 <element ref="xn:VsDataContainer"/>
                </choice>
              </sequence>
            </extension>
          </complexContent>
        </complexType>
      </element>
      <element name="Link_MCE_ENB" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
        <complexType>
          <complexContent>
            <extension base="xn:NrmClass">
              <sequence>
                <element name="attributes" minOccurs="0">
                  <complexType>
                    <all>
                      <!-- Inherited attributes from Link -->
                      <element name="aEnd" type="xn:dn" minOccurs="0"/>
                      <element name="linkType" type="xn:linkType" minOccurs="0"/>
```

```
                <element name="protocolName" type="string" minOccurs="0"/>
                <element name="protocolVersion" type="string" minOccurs="0"/>
                <element name="userLabel" type="string" minOccurs="0"/>
                <element name="zEnd" type="xn:dn" minOccurs="0"/>
                <!-- End of inherited attributes from Link -->
              </all>
            </complexType>
          </element>
          <choice minOccurs="0" maxOccurs="unbounded">
            <element ref="en:Link_MCE_ENBOptionallyContainedNrmClass"/>
            <element ref="xn:VsDataContainer"/>
          </choice>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<element name="Link_MCE_MME" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
    <complexType>
      <complexContent>
        <extension base="xn:NrmClass">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                  <!-- Inherited attributes from Link -->
                  <element name="aEnd" type="xn:dn" minOccurs="0"/>
                  <element name="linkType" type="xn:linkType" minOccurs="0"/>
                  <element name="protocolName" type="string" minOccurs="0"/>
                  <element name="protocolVersion" type="string" minOccurs="0"/>
                  <element name="userLabel" type="string" minOccurs="0"/>
                  <element name="zEnd" type="xn:dn" minOccurs="0"/>
                  <!-- End of inherited attributes from Link -->
                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
              <element ref="en:Link_MCE_MMEOptionallyContainedNrmClass"/>
              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
        </extension>
      </complexContent>
    </complexType>
  </element>


  <element name="QciDscpMapping"
    substitutionGroup="en:RNFunctionOptionallyContainedNrmClass"
  >
    <complexType>
      <complexContent>
        <extension base="xn:NrmClass">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
                <all>
                  <element name="userLabel" type="string"/>
                  <element name="qciDscpMappingList" type="en:qciDscpMappingListType"/>
                </all>
              </complexType>
            </element>
            <choice minOccurs="0" maxOccurs="unbounded">
              <element ref="xn:VsDataContainer"/>
            </choice>
          </sequence>
        </extension>
      </complexContent>
    </complexType>
  </element>

  <element name="EnergySavingProperties">
    <complexType>
      <complexContent>
        <extension base="xn:NrmClass">
          <sequence>
            <element name="attributes" minOccurs="0">
              <complexType>
```

```
              <all>
                <element name="energySavingState" type="en:energySavingStateEnumType"/>
                <element name="energySavingControl" type="en:energySavingControlEnumType"
                            minOccurs="0"/>
              </all>
            </complexType>
          </element>
        </sequence>
      </extension>
    </complexContent>
  </complexType>
</element>
<!-- The element definition for EP_RP_EPS is available through
     the epcNrm.xsd (3GPP TS 32.756), by using epc:EP_RP_EPS -->
<element name="ENBFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="ExternalENBFunctionOptionallyContainedNrmClass" type="xn:NrmClass"
abstract="true"/>
<element name="EUtranCellFDDOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="ExternalEUtranCellFDDOptionallyContainedNrmClass" type="xn:NrmClass"
abstract="true"/>
<element name="EUtranCellTDDOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="ExternalEUtranCellTDDOptionallyContainedNrmClass" type="xn:NrmClass"
abstract="true"/>
<element name="EUtranRelationOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="Cdma2000RelationOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="Link_ENB_ENBOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="MCEFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="Link_MCE_ENBOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="Link_MCE_MMEOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="MBSFNAreaOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>
<element name="RNFunctionOptionallyContainedNrmClass" type="xn:NrmClass" abstract="true"/>

</schema>
```

Annex C (informative): Change history

Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Cat	Old	New
05-2010	SA-48	SP-100281	--	--	Presentation to SA for information and approval	--	---	1.0.0
06-2010	SA-48	--	--	--	Publication	--	1.0.0	10.0.0
09-2010	SA-49	SP-100489	001	--	Addition of eNBId and adjustment of cellIdentity	C	10.0.0	10.1.0
09-2010	SA-49	SP-100489	002	--	Add IOC MCEFunction and MBSFNArea	B	10.0.0	10.1.0
09-2010	SA-49	SP-100487	003	--	Align with IS - Remove cellType	A	10.0.0	10.1.0
09-2010	SA-49	SP-100488	004	--	Align with IS - Add attributes for association roles for Radio Equipment view	A	10.0.0	10.1.0
09-2010	SA-49	SP-100489	005	--	Correction of EUTRAN NRM IRP XML Definitions	F	10.0.0	10.1.0
12-2010	SA-50	SP-100833	006	1	Correcting the PLMNID definition of XML schema - Align with 23.003 and 32.762 IS	F	10.1.0	10.2.0
12-2010	SA-50	SP-100833	007	1	Adding Relay and Donor eNodeB NRM SS - Align with RAN2 TS 36.300	B	10.1.0	10.2.0
12-2010	SA-50	SP-100833	008	1	Add an attribute to SS EUtranGenericCell to set allowed access class per cell	B	10.1.0	10.2.0
03-2011	SA-51	SP-110095	009	2	Add candidateDeNBCells attribute to RNFunction in E-UTRAN Network Resource Model IRP Solution Set definitions	B	10.2.0	10.3.0
03-2011	SA-51	SP-110095	010	3	Add QciDscpMapping IOC	B	10.2.0	10.3.0
03-2011	SA-51	SP-110100	013	3	Add Energy Saving Management (ESM) items for Itf-N - Align with 32.762 E-UTRAN NRM IRP IS and 32.551 ESM Concepts and requirements	F	10.2.0	10.3.0
03-2011	SA-51	SP-110100	013	4	Add Energy Saving Management (ESM) items for Itf-N - Align with 32.762, 32.551 NOTE: MCC modification of "toBeNotEnergySaving" instead of "NotToBeEnergySaving" to align with 32.762	F	10.2.0	10.3.0
03-2011	SA-51	SP-110096	016	1	Removing SectorEquipmentFunction - Align with EUTRAN NRM IS	F	10.2.0	10.3.0
03-2011	SA-51	SP-110095	018	1	Align with 32.762 - Correct Relay and Donor eNodeB model in E-UTRAN Network Resource Model IRP	F	10.2.0	10.3.0
03-2011	SA-51	SP-110102	020	1	Adding TCE address and TCE ID mapping information to ENBFunction	B	10.2.0	10.3.0
03-2011	SA-51	SP-110097	021	1	Add a new object class to hold information about Cell Outage Compensation (COC) and report COC activities - Align with 32.762	B	10.2.0	10.3.0

History

Document history		
V10.3.0	April 2011	Publication