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Network Resource Model (NRM)
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Foreword

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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:

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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:

32.641: "Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Requirements".

32.642: "Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

32.646 "Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP); Solution Set (SS) definitions".

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 Network Elements (NEs) and Network Resources, and they may be initiated by the operator or by functions in the Operations Systems (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 (QoS). The CM actions are initiated either as single actions on single NEs of the 3G network, or as part of a complex procedure involving actions on many resources/objects in one or several NEs.

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1 Scope

The present document specifies the UTRAN network resource information that can be communicated between an IRPAgent and one or several IRPManagers for network management purposes.

The present document specifies the semantics and behaviour of information object class attributes and relations visible across the reference point in a protocol and technology neutral way. It does not define their syntax and encoding.

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: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 23.003: "Numbering, addressing and identification".

[4] 3GPP TS 25.401: "UTRAN Overall Description".

[5] 3GPP TS 25.433: "UTRAN Iub Interface NBAP Signalling".

[6] 3GPP TS 32.652: "Telecommunication management; Configuration Management (CM); GERAN network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[7] Void.

[8] 3GPP TS 32.672: "Telecommunication management; Configuration Management (CM); State Management Integration Reference Point (IRP): Information Service (IS)".

[9] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification".

[10] Void.

[11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)".

[12] Void.

[13] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[14] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[15] 3GPP TS 23.002: "Network Architecture".

[16] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[17] 3GPP TS 32.602: "Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP) Information Service (IS)".

[18] 3GPP TS 32.612: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Information Service (IS)".

[19] Void

[20] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[21] 3GPP TS 25.466: "UTRAN Iuant interface: Application Part".

[22] 3GPP TS 25.463 UTRAN Iuant Interface: Remote Electrical Tilting (RET) antennas Application Part (RETAP) signalling.

[23] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[24] 3GPP TS 32.792: "Generic Radio Access Network (RAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS) ".

[25] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[26] 3GPP TS 32.762: "Telecommunication management; Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[27] 3GPP TS 32.522: "Self-Organizing Networks (SON) Policy Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply. For terms and definitions not found here, please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2] and 3GPP TS 32.600 [14].

Antenna: Within the present document an Antenna is the set of radiating elements involved in the transmission and reception of Radio Frequency energy to support the Uu interface of a UTRAN cell. See Annex B for more detail.

Association: In general it is used to model relationships between Managed Objects. Associations can be implemented in several ways, such as:

(1) name bindings,

(2) reference attributes, and

(3) association objects.

This IRP stipulates that containment associations shall be expressed through name bindings, but it does not stipulate the implementation for other types of associations as a general rule. These are specified as separate entities in the object models (UML diagrams).

Managed Element (ME): An instance of the Information Object Class ManagedElement defined in TS 32.622 [16].

Managed Object (MO): In the context of the present document, a Managed Object (MO) is a software object that encapsulates the manageable characteristics and behaviour of a particular Network Resource. The MO is instance of a MO class defined in a MIM/NRM. This class, called **Information Object Class (IOC)** has attributes that provide information used to characterize the objects that belong to the class (the term "attribute" is taken from TMN and corresponds to a "property" according to CIM). Furthermore, the IOC can have operations that represent the behaviour relevant for that class (the term "operation" is taken from TMN and corresponds to a "method" according to CIM). The IOC may support the emission of notifications that provide information about an event occurrence within a network resource.

Management Information Model (MIM): Also referred to as NRM – see the definition below.

Network Resource Model (NRM): A model representing the actual managed telecommunications network resources that a System is providing through the subject IRP. An NRM identifies and describes the IOCs, their associations, attributes and operations. The NRM is also referred to as "MIM" (see above), which originates from the ITU-T TMN.

Node B: A logical node responsible for radio transmission/reception in one or more cells to/from the User Equipment. It terminates the Iub interface towards the RNC.

TMA Subunit: See TS 25.466 [21].

Tower Mounted Amplifier: See TS 25.466 [21].

3.2 Abbreviations

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

CIM	Common Information Model
CN	Core Network
DN	Distinguished Name (see 3GPP TS 32.300 [13])
EM	Element Manager
FDD	Frequency Division Duplex
FM	Fault Management
IOC	Information Object Class
IRAT	Inter-RAT (Radio Access Technology)
IRP	Integration Reference Point
Iub	Interface between RNC and Node B
Mcps	Mega-chips per second
ME	Managed Element
MIM	Management Information Model
MO	Managed Object
NE	Network Element
NM	Network Manager
NR	Neighbour cell Relation
NRM	Network Resource Model
PM	Performance Management
PS	Packet Switched
RDN	Relative Distinguished Name (see 3GPP TS 32.300 [13])
RET	Remote control of Electrical Tilting (RET) antenna
RNC	Radio Network Controller
TDD	Time Division Duplex
TMA	Tower Mounted Amplifier
TMN	Telecommunications Management Network
UML	Unified Modelling Language
UMTS	Universal Mobile Telecommunications System
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

4 System overview

4.1 Void

4.2 Compliance rules

The following defines the meaning of Mandatory and Optional IOC attributes and associations between IOCs, in Solution Sets to the IRP defined by the present document:

- The IRPManager shall support all mandatory attributes/associations. The IRPManager shall be prepared to receive information related to mandatory as well as optional attributes/associations without failure; however the IRPManager does not have to support handling of the optional attributes/associations.
- The IRPAgent shall support all mandatory attributes/associations. It may support optional attributes/associations.

An IRPAgent that incorporates vendor-specific extensions shall support normal communication with a 3GPP SA5-compliant IRPManager with respect to all Mandatory and Optional information object classes, attributes and associations without requiring the IRPManager to have any knowledge of the extensions.

Given that

- rules for vendor-specific extensions remain to be fully specified, and
- many scenarios under which IRPManager and IRPAgent interwork may exist,

it is recognised that the IRPManager, even though it is not required to have knowledge of vendor-specific extensions, may be required to be implemented with an awareness that extensions can exist and behave accordingly.

5 Modelling approach

The modelling approach adopted and used in this IRP is described in TS 32.622 [16].

6 Information Object Classes

6.1 Information entities imported and local labels

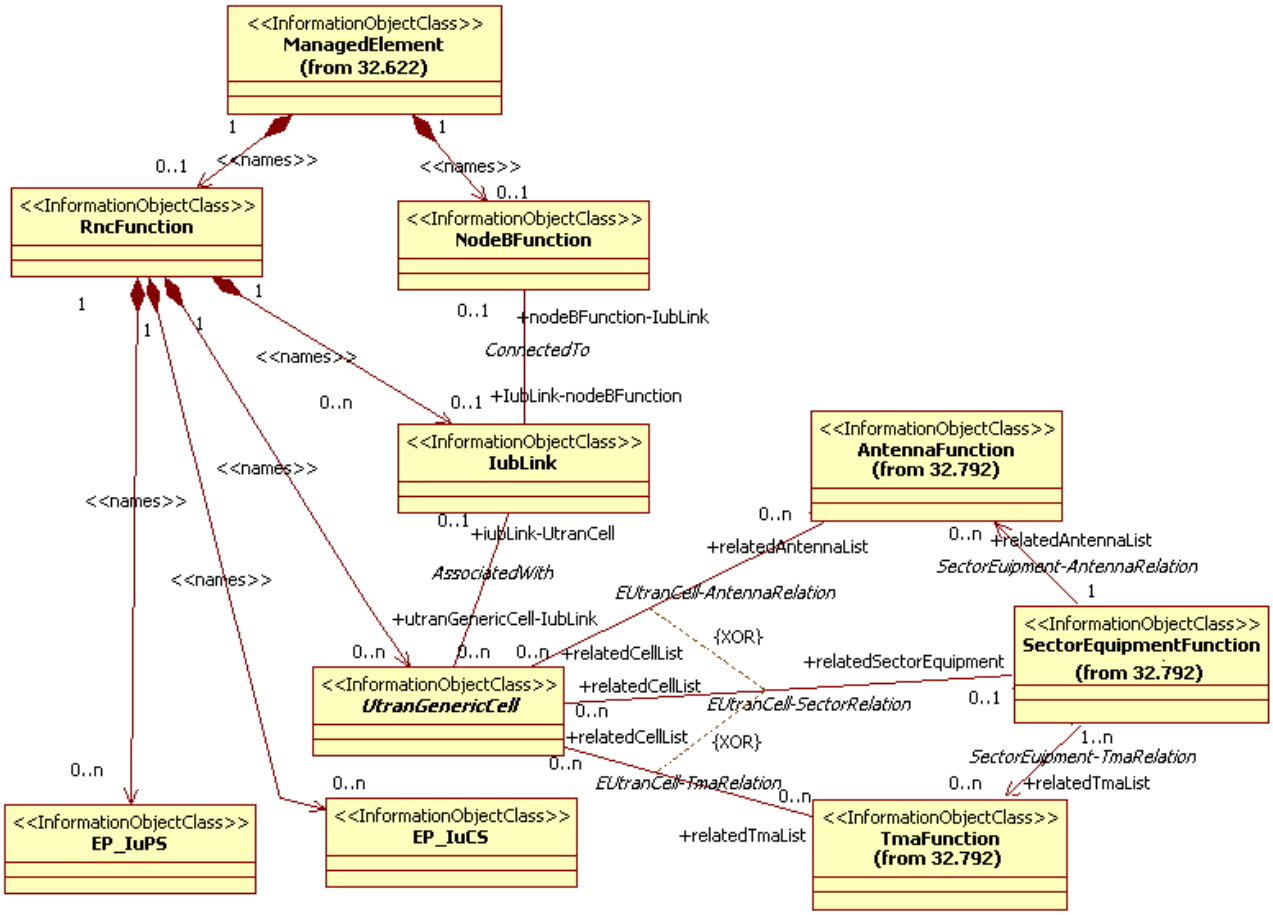
Label reference	Local label
3GPP TS 32.622 [16], IOC, ManagedElement	ManagedElement
3GPP TS 32.622 [16], IOC, ManagedFunction	ManagedFunction
3GPP TS 32.622 [16], IOC, MeContext	MeContext
3GPP TS 32.622 [16], IOC, SubNetwork	SubNetwork
3GPP TS 32.622 [16], IOC, Top	Top
3GPP TS 32.622 [16], IOC, VsDataContainer	VsDataContainer
3GPP TS 32.622 [16], IOC, EP_RP	EP_RP
3GPP TS 32.652 [6], IOC, GsmRelation	GsmRelation
3GPP TS 32.672 [8], attribute, operationalState	operationalState
3GPP TS 32.792 [24], IOC, AntennaFunction	AntennaFunction
3GPP TS 32.792 [24], IOC, TmaFunction	TmaFunction
3GPP TS 32.792 [24], IOC, SectorEquipmentFunction	SectorEquipmentFunction
3GPP TS 32.762 [26], attribute, EUtranRelation	EUtranRelation
3GPP TS 32.522 [27], IOC, EnergySavingProperties	EnergySavingProperties

6.2 Class diagram

6.2.1 Attributes and relationships

This clause depicts the set of IOCs that encapsulate information relevant for this service. This clause provides the overview of all information object classes in UML. Subsequent clauses provide more detailed specification of various aspects of these information object classes.

The following figures show the containment/naming hierarchy and the associations of the information object classes defined in the present document. They are split in several figures only for a readability purpose.



NOTE 1: The listed cardinality numbers, in particular the use of cardinality number zero, do not represent transient states. The transient state is considered an inherent property of all IOC instances and therefore there is no need to represent them by individual IOC cardinality numbers.

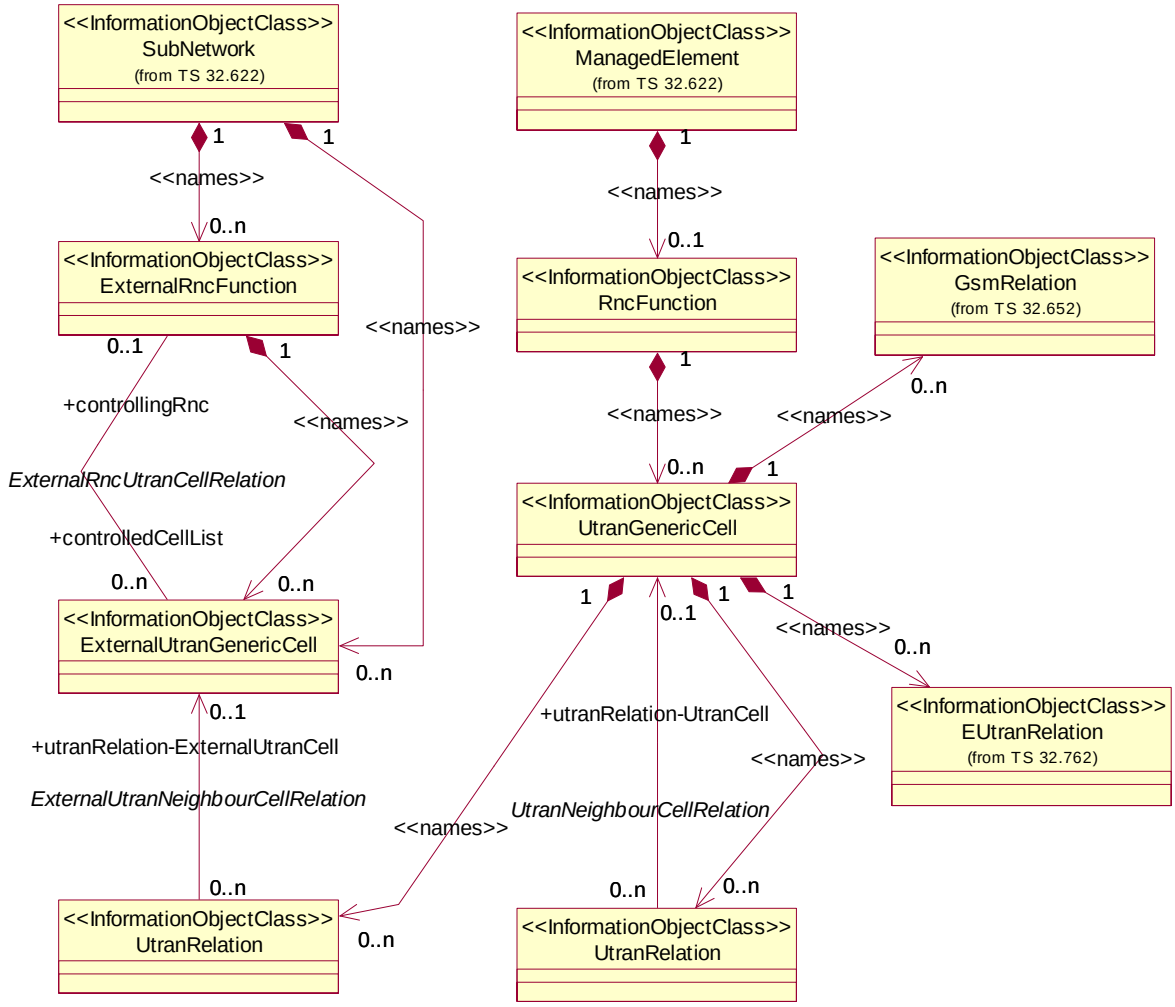
NOTE 2: The IOC `AntennaFunction` is required when supporting RET. For a description and clarification of RET, please refer to Annex B.

NOTE 3: The instances of the `AntennaFunction` associated with a particular instance of `NodeBFunction` shall be contained by the same `ManagedElement` instance.

NOTE 4: The instances of the `TmaFunction` associated with a particular instance of `NodeBFunction` shall be contained by the same `ManagedElement` instance.

NOTE 5: Please see TS 32.792 [24] for the definitions of the associations `EUtranCell-AntennaRelation`, `EUtranCell-SectorRelation`, `EUtranCell-TmaRelation`, `SectorEquipment-AntennaRelation` and `SectorEquipment-TmaRelation`.

Figure 6.2.1.1: Transport view UTRAN NRM Containment/Naming and Association diagram



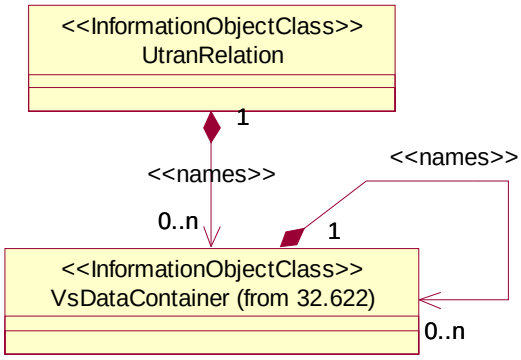
NOTE 1: The listed cardinality numbers, in particular the use of cardinality number zero, do not represent transient states. The transient state is considered an inherent property of all IOC instances and therefore there is no need to represent them by individual IOC cardinality numbers.

NOTE 2: The relation between `GsmRelation` and `GsmCell` is optional. It may be present if both the `UtranGenericCell` and the `GsmCell` are managed by the same management node.

NOTE 3: The `UtranRelation` and `GsmRelation` can be name-contained under IOCs defined in other NRMs.

NOTE 4: `ExternalUtranGenericCell` is contained under `SubNetwork` or `ExternalRncFunction`.

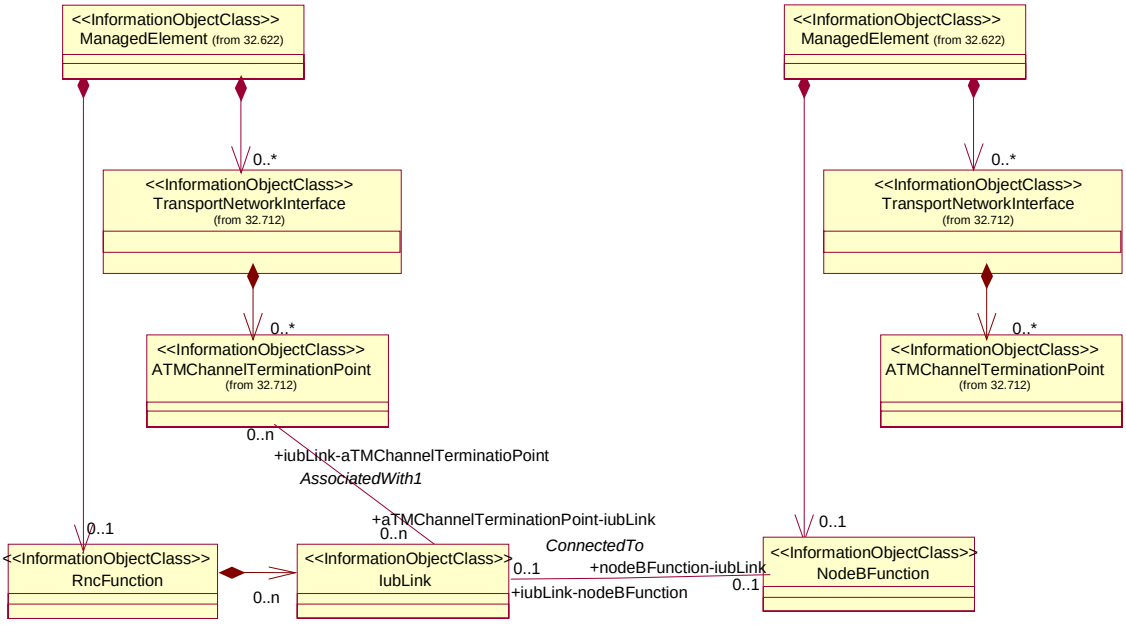
Figure 6.2.1.2: Cell view UTRAN NRM Containment/Naming and Association diagram



NOTE 1: The listed cardinality numbers, in particular the use of cardinality number zero, do not represent transient states. The transient state is considered an inherent property of all IOC instances and therefore there is no need to represent them by individual IOC cardinality numbers.

NOTE 2: Each instance of the `VsDataContainer` shall only be contained under one IOC.
The `VsDataContainer` can be contained under IOCs defined in other NRMs.

Figure 6.2.1.3: `VsDataContainer` Containment/Naming and Association in UTRAN NRM diagram



NOTE 1: The `ATMChannelTerminationPoint` is name-contained under IOCs defined in the Transport Network NRM.

NOTE 2: The group of `ATMChannelTerminationPoints` associated with an `IubLink` (the relation `AssociatedWith1`) represent the RNC end of the ATM Virtual Channel Connections (transport connection) between an RNC and a NodeB.

NOTE 3: An `ATMChannelTerminationPoint` can be associated with more than one `IubLink` for the case of AAL2 multiplexing/switching.
I.e. to allow an ATM Channel at the RNC to be connected to multiple NodeBs.

Figure 6.2.1.4: UTRAN Transport Network NRM Containment/Naming and Association diagram

The `VsDataContainer` is only used for the Bulk CM IRP.

Each IOC is identified with a Distinguished Name (DN) according to 3GPP TS 32.300 [13] that expresses its containment hierarchy. As an example, the DN of an IOC instance representing a cell could have a format like:

`SubNetwork`=Sweden, `MeContext`=MEC-Gbg-1,`ManagedElement`=RNC-Gbg-1, `RncFunction`=RF-1,`UtranCell`=Gbg-1.

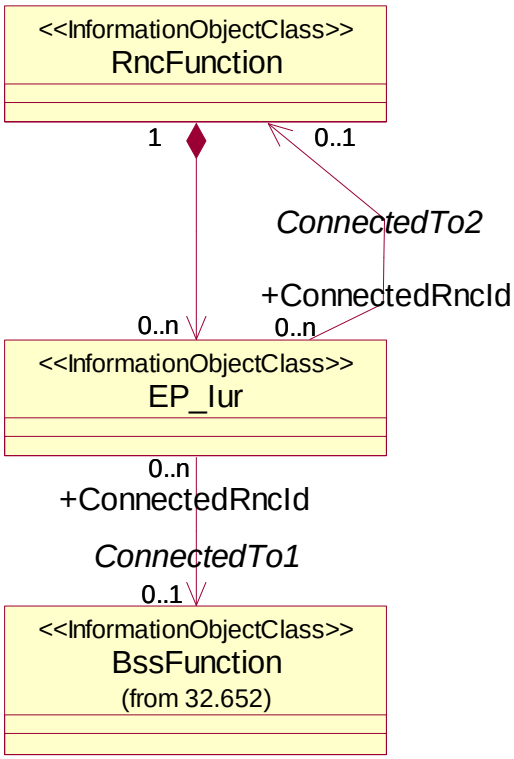


Figure 6.2.1.5: `EP_Iur` Containment/Naming and Association diagram

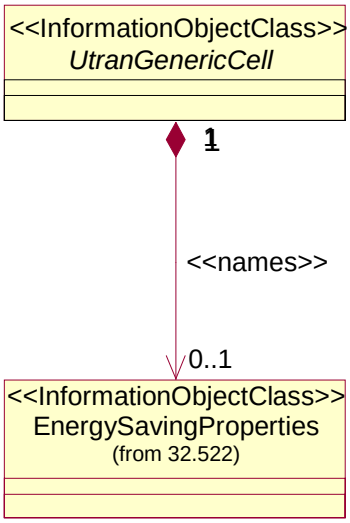


Figure 6.2.1.6: Energy Saving view of UTRAN NRM

6.2.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

Figure 6.2.2.1 shows the inheritance hierarchy for the UTRAN NRM.

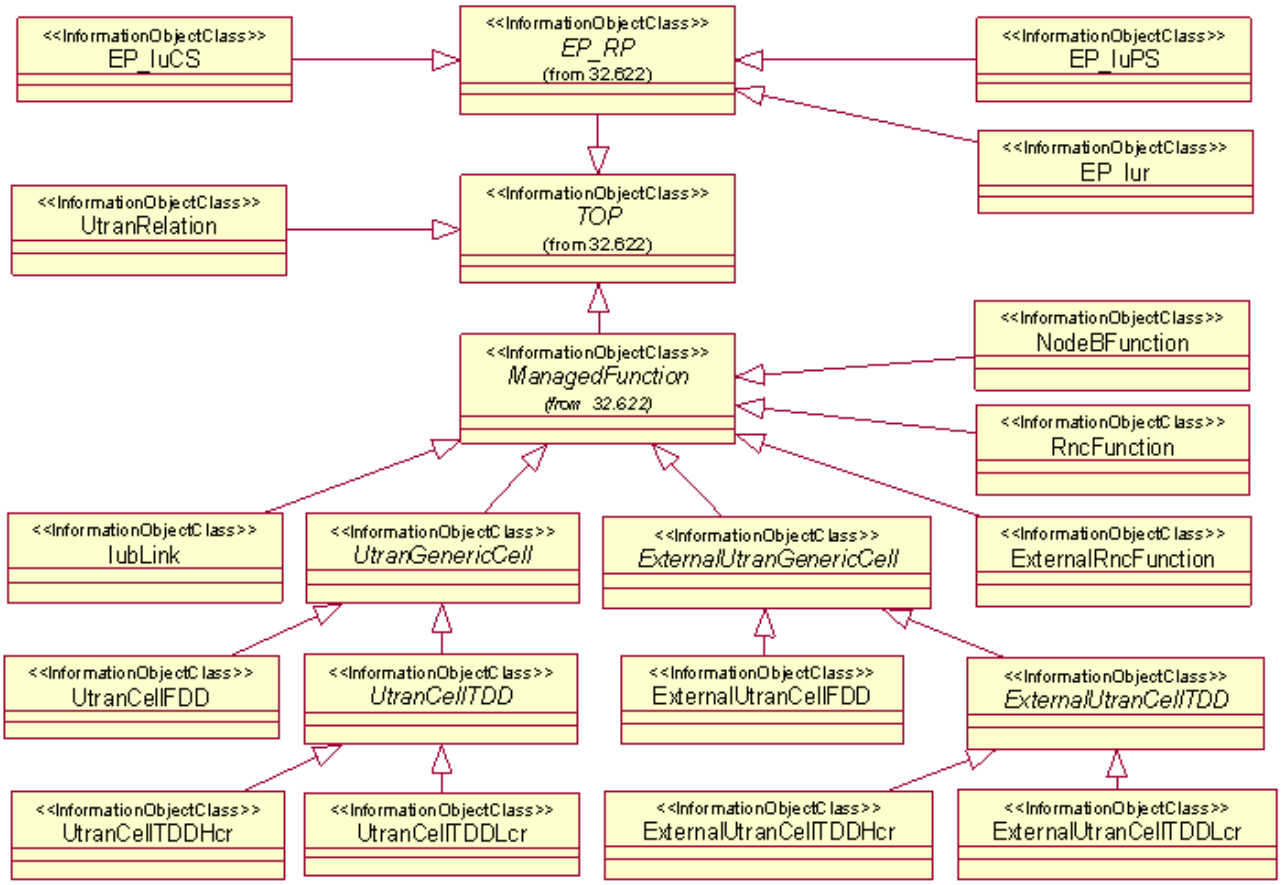


Figure 6.2.2.1: UTRAN NRM Inheritance Hierarchy

6.3 Information object class definitions

6.3.1 RncFunction

6.3.1.1 Definition

This IOC represents RNC functionality. For more information about the RNC, see 3GPP TS 23.002 [15].

6.3.1.2 Attributes

Attributes of RncFunction

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
intraANRSwitch	CM	M	M
iRATANRSwitch	CM	M	M
mcc	M	M	M
mnc	M	M	M
rncId	M	M	M
siptoSupported	M	M	-
tceIDMappingInfoList	CM	M	M
sharNetTceMappingInfoList	CM	M	M

6.3.1.3 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.1.4 Attribute constraints

Name	Definition
intraANRSwitch Support Qualifier	The condition is “ANR function is supported”.
iRATANRSwitch Support Qualifier	The condition is “ANR function is supported”.
tceIDMappingInfoList	The condition is “MDT function is supported”
sharNetTceMappingInfoList	The condition is “MDT function and when several PLMNs are supported”

6.3.2 NodeBFunction

6.3.2.1 Definition

This IOC represents Node B functionality. For more information about the Node B, see 3GPP TS 23.002 [15].

6.3.2.2 Attributes

Attributes of NodeBFunction

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
nodeBFunction-IubLink	M	M	-

6.3.2.3 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.3 Void

6.3.4 IubLink

6.3.4.1 Definition

This IOC represents the logical link to a Node B as seen from the RNC. For more information about the RNC, see 3GPP TS 23.002 [15].

6.3.4.2 Attributes

Attributes of IubLink

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
iubLink-UtranCell	M	M	M
iubLink-NodeBFunction	M	M	-
iubLink-ATMChannelTerminationPoint	M	M	-

6.3.4.3 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.5 UtranRelation

6.3.5.1 Definition

The UtranRelation IOC contains radio network related parameters for the NR from a source cell to an UtranGenericCell or ExternalUtranGenericCell instance.

The source cell can be an UtranGenericCell instance. This is the case for an Intra-UTRAN NR.

The source cell can be an EUtranGenericCell instance. This is the case for an Inter-RAT NR from E-UTRAN to UTRAN. See 3GPP TS 32.762 [26].

The source cell can be a GsmCell instance. This is the case for an Inter-RAT NR from GERAN to UTRAN. See 3GPP TS 32.652 [6].

NRs are unidirectional.

The UtranGenericCell and the ExternalUtranGenericCell may be an FDD mode cell, a lcr (low chip rate) 1.28 Mcps TDD mode cell or a hcr (high chip rate) 3.84 (7.68) Mcps TDD mode cell.

NOTE: In handover relation terms, the cell containing the UTRAN Relation object is the source cell for the handover. The cell referred to in the UTRAN relation object is the target cell for the handover. This defines a one-way handover relation where the direction is *from* source cell *to* target cell.

6.3.5.2 Attributes

Attributes of UtranRelation

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
adjacentCell	M	M	M
isRemoveAllowed	CM	M	M
isHOAllowed	CM	M	M
isESCoveredBy	CM	M	M

6.3.5.3 Attribute constraints

Name	Definition
isRemoveAllowed Support Qualifier	The condition is "ANR function is supported in the source cell and the source cell is an UtranGenericCell, or Inter-RAT ANR function is supported in the source cell, and the source cell is an EUtranGenericCell".
isHOAllowed Support Qualifier	The condition is "ANR function is supported in the source cell and the source cell is an UtranGenericCell, or Inter-RAT ANR function is supported in the source cell, and the source cell is an EUtranGenericCell".
isESCoveredBy Support Qualifier	The condition is "The source cell is an E-UTRAN cell which supports Inter-RAT Energy Saving".

6.3.5.4 Notifications

See clause 6.7.2 Configuration notifications.

6.3.6 Void

6.3.7 Void

6.3.8 ExternalRncFunction

6.3.8.1 Definition

This IOC represents an RNC function controlled by another IRPAgent. For more information about the RNC, see 3GPP TS 23.002 [15].

6.3.8.2 Attributes

Attributes of ExternalRncFunction

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
mcc	M	M	M
mnc	M	M	M
rncId	M	M	M
controlledCellList	O	M	-

6.3.8.3 Notifications

See clause 6.7.2 Configuration notifications.

6.3.9 UtranGenericCell

6.3.9.1 Definition

This abstract IOC represents the common properties of radio cells of different types (FDD, TDD) controlled by an RNC. For more information about radio cells, see 3GPP TS 23.002 [15].

The IOC UtranCellFDD and UtranCellTDD (1.28 Mcps TDD mode cell or a 3.84 (7.68) Mcps TDD mode cell) inherit from that abstract IOC.

The second table lists the additional attributes of `UtranGenericCell` for the support of State Management.

6.3.9.2 Attributes

Attributes of `UtranGenericCell`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
cId	M	M	M
localCellId	M	M	M
relatedAntennaList	CO	M	M
maximumTransmissionPower	M	M	M
pichPower	CM	M	O
pchPower	CM	M	O
fachPower	CM	M	O
cellMode	M	M	-
lac	M	M	M
rac	CM	M	M
sac	M	M	M
uraList	CM	M	M
utranGenericCell-IubLink	M	M	-
hsFlag	CM	M	-
hsEnable	CM	M	M
numOfHspdschs	CM	M	M
numOfHsscchs	CM	M	M
frameOffset	CO	M	-
cellIndividualOffset	CO	M	-
hcsPrio	CO	M	-
maximumAllowedUlTxPower	CO	M	-
snaInformation	CO	M	-
qrxlevMin	CO	M	-
deltaQrxlevmin	CO	M	-
qhcs	CO	M	-
penaltyTime	CO	M	-
referenceTimeDifferenceToCell	CO	M	-
readSFNIndicator	CO	M	-
restrictionStateIndicator	CO	M	-
dpcModeChangeSupportIndicator	CO	M	-
relatedTmaList	CO	M	-
relatedSectorEquipment	CM	M	-
isChangeForEnergySavingAllowed	CM	M	M

Attribute Name	Support Qualifier	READ	WRITE
operationalState	O	M	_
NOTE: No state propagation shall be implied.			

6.3.9.3 Attribute Constraints

Name	Definition
relatedAntennaList and relatedTmaFunction CO support qualifier	The IOC SectorEquipmentFunction (see 32.792 [24]) is not used
relatedSectorEquipment CM support qualifier	The IOC SectorEquipmentFunction (see 32.792 [24]) is used
rac and uraList CM support qualifier	The PLMN contains a PS CN.
hsFlag, hsEnable, numOfHspdschs and numOfHsscchs CM support qualifier	The HSDPA feature is not supported by vendor specific extension mechanisms.
pichPower, pchPower and fachPower CM support qualifier	The attributes pichPower, pchPower and fachPower are not supported by vendor specific extension mechanisms.
frameOffset, cellIndividualOffset, hcsPrio, maximumAllowedUlTxPower, snaInformation, qrxlevMin, deltaQrxlevmin, qhcs, penaltyTime, referenceTimeDifferenceToCell, readSFNIndicator, restrictionStateIndicator and dpcModeChangeSupportIndicator CO support qualifier	Itf-p2p is supported.
isChangeForEnergySavingAllowed CM Support Qualifier	The energy saving functionality is supported and uses distributed architecture.

6.3.9.4 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.10 ExternalUtranGenericCell

6.3.10.1 Definition

This abstract IOC represents the properties of a radio cell controlled by another IRPAgent. This IOC contains necessary attributes for inter-system and intra-system handover. It also contains a subset of the attributes of related IOCs controlled by another IRPAgent. The way to maintain consistency between the attribute values of these IOCs is outside the scope of the present document.

6.3.10.2 Attributes

Attributes of `ExternalUtranGenericCell`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
id	M	M	-
cId	M	M	M
mcc	M	M	M
mnc	M	M	M
rncId	M	M	M
cellMode	M	M	-
lac	M	M	M
rac	CM	M	M
controllingRnc	O	M	-
hsFlag	CM	M	-
frameOffset	CO	M	-
cellIndividualOffset	CO	M	-
hcsPrio	CO	M	-
maximumAllowedUlTxPower	CO	M	-
qrxlevMin	CO	M	-
deltaQrxlevmin	CO	M	-
qhcs	CO	M	-
penaltyTime	CO	M	-
referenceTimeDifferenceToCell	CO	M	-
readSFNIndicator	CO	M	-
restrictionStateIndicator	CO	M	-
dpcModeChangeSupportIndicator	CO	M	-
snaInformation	CO	M	-

6.3.10.3 Attribute Constraints

Name	Definition
rac CM support qualifier	The PLMN contains a PS CN.
hsFlag CM support qualifier	The HSDPA feature is not supported by vendor specific extension mechanisms.
frameOffset, cellIndividualOffset, hcsPrio, maximumAllowedUlTxPower, qrxlevMin, deltaQrxlevmin, qhcs, penaltyTime, referenceTimeDifferenceToCell, readSFNIndicator, restrictionStateIndicator, dpcModeChangeSupportIndicator and snaInformation CO support qualifier	Itf-p2p is supported.

6.3.10.4 Notifications

See clause 6.7.2 Configuration notifications.

6.3.11 UtranCellFDD

6.3.11.1 Definition

This IOC represents a FDD radio cell controlled by an RNC. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.11.2 Attributes

Attributes of UtranCellFDD

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uarfcnUl	O	M	M
uarfcnDl	O	M	M
primaryScramblingCode	O	M	M
primaryCpichPower	O	M	M
primarySchPower	O	M	M
secondarySchPower	O	M	M
bchPower	O	M	M
aichPower	O	M	-
qqualMin	CO	M	-
cellCapabilityContainerFDD	CO	M	-
txDiversityIndicator	CO	M	-
temporaryOffset1	CO	M	-
temporaryOffset2	CO	M	-
sttdSupportIndicator	CO	M	-
closedLoopMode1SupportIndicator	CO	M	-

6.3.11.3 Attribute Constraints

Name	Definition
aichPower CM support qualifier	The attribute aichPower is not supported by vendor specific extension mechanisms.
qqualMin, cellCapabilityContainerFDD, txDiversityIndicator temporaryOffset1, temporaryOffset2, sttdSupportIndicator and closedLoopMode1SupportIndicator CO support qualifier	Itf-p2p is supported.

6.3.12 UtranCellTDD

6.3.12.1 Definition

This IOC is an abstract class representing the common properties of TDD high chip rate (hcr) and TDD low chip rate (lcr) radio cells controlled by an RNC. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.12.2 Attributes

Attributes of `UtranCellTDD`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uarfcn	O	M	M
cellParameterId	O	M	M
primaryCcpchPower	O	M	M
cellCapabilityContainerTDD	CO	M	-
sctdIndicator	CO	M	-
dpchConstantValue	CO	M	-

6.3.12.3 Attribute Constraints

Name	Definition
cellCapabilityContainerTDD, sctdIndicator and dpchConstantValue CO support qualifier	Itf-p2p is supported.

6.3.13 UtranCellTDDLcr

6.3.13.1 Definition

This IOC represents a TDD low chip rate (lcr) radio cell controlled by an RNC. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.13.2 Attributes

Attributes of `UtranCellTDDLcr`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uarfcnLCRList	O	M	M
fpachPower	O	M	O
dwPchPower	O	M	M
tstdIndicator	CO	M	-
timeSlotListLcr	O	M	M

6.3.13.3 Attribute Constraints

Name	Definition
tstdIndicator CO support qualifier	Itf-p2p is supported.

6.3.14 UtranCellTDDHcr

6.3.14.1 Definition

This IOC represents a TDD high chip rate (hcr) radio cell controlled by an RNC. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.14.2 Attributes

Attributes of `UtranCellTDDHcr`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
schPower	O	M	M
temporaryOffset1	CO	M	-
syncCase	CO	M	-
timeSlotForSch	CO	M	-
schTimeSlot	CO	M	-
timeSlotListHcr	O	M	M

6.3.14.3 Attribute Constraints

Name	Definition
temporaryOffset1, syncCase, timeSlotForSch and schTimeSlot CO support qualifier	Itf-p2p is supported.

6.3.15 ExternalUtranCellFDD

6.3.15.1 Definition

This IOC represents a FDD radio cell controlled by another IRP agent. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.15.2 Attributes

Attributes of ExternalUtranCellFDD

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uarfcnUl	O	M	M
uarfcnDl	O	M	M
primaryScramblingCode	O	M	M
primaryCpichPower	O	M	M
qqualMin	CO	M	-
cellCapabilityContainerFDD	CO	M	-
txDiversityIndicator	CO	M	-
temporaryOffset1	CO	M	-
temporaryOffset2	CO	M	-
sttdSupportIndicator	CO	M	-
closedLoopMode1SupportIndicator	CO	M	-

6.3.15.3 Attribute Constraints

Name	Definition
qqualMin, cellCapabilityContainerFDD, txDiversityIndicator, temporaryOffset1, temporaryOffset2, sttdSupportIndicator and closedLoopMode1SupportIndicator CO support qualifier	Itf-p2p is supported.

6.3.16 ExternalUtranCellTDD

6.3.16.1 Definition

This IOC is an abstract class representing the common properties of TDD high chip rate (hcr) and TDD low chip rate (lcr) radio cells controlled by another IRP agent. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.16.2 Attributes

Attributes of ExternalUtranCellTDD

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uarfcn	O	M	M
cellParameterId	O	M	M
primaryCcpchPower	O	O	O
cellCapabilityContainerTDD	CO	M	-
sctdIndicator	CO	M	-
dpchConstantValue	CO	M	-

6.3.16.3 Attribute Constraints

Name	Definition
`cellCapabilityContainerTDD`, `sctdIndicator` and `dpchConstantValue` CO support qualifier	Itf-p2p is supported.

6.3.17 ExternalUtranCellTDDHcr

6.3.17.1 Definition

This IOC represents a TDD high chip rate (hcr) radio cell controlled by another IRPAgent. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.17.2 Attributes

Attributes of ExternalUtranCellTDDHcr

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
temporaryOffset1	CO	M	-
syncCase	CO	M	-
timeSlotForSch	CO	M	-
schTimeSlot	CO	M	-
timeSlotListHcr	O	M	-

6.3.17.3 Attribute Constraints

Name	Definition
temporaryOffset1, syncCase, timeSlotForSch and schTimeSlot CO support qualifier	Itf-p2p is supported.

6.3.18 ExternalUtranCellTDDLcr

6.3.18.1 Definition

This IOC represents a TDD low chip rate (lcr) radio cell controlled by another IRPAgent. For more information about radio cells, see 3GPP TS 23.002 [15].

6.3.18.2 Attributes

Attributes of ExternalUtranCellTDDLcr

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
tstdIndicator	CO	M	-
timeSlotListLcr	O	M	-

6.3.18.3 Attribute Constraints

Name	Definition
tstdIndicator CO support qualifier	Itf-p2p is supported.

6.3.19 Void

6.3.20 EP_IuCS

6.3.20.1 Definition

This IOC represents an end point of the Iu-CS interface. For more information Iu-CS interface, see 3GPP TS 23.002 [15].

6.3.20.2 Attributes

Attributes of EP_IuCS

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
connMscNumber	CO	M	-

6.3.20.3 Attribute Constraints

Name	Definition
connMscNumber CO support qualifier	The farEndEntity is supported

6.3.20.4 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.21 EP_IuPS

6.3.21.1 Definition

This IOC represents an end point of the Iu-PS interface. For more information Iu-PS interface, see 3GPP TS 23.002 [15].

6.3.21.2 Attributes

Attributes of EP_IuPS

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
connSgsnNumber	CO	M	-

6.3.21.3 Attribute Constraints

Name	Definition
connSgsnNumber CO support qualifier	The farEndEntity is supported

6.3.21.4 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.3.22 EP_Iur

6.3.22.1 Definition

This IOC represents an end point of the Iur interface. For more information Iur interface, see 3GPP TS 23.002 [15].

6.3.22.2 Attributes

Attributes of `EP_Iur`

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
`connectedRncId`	CO	M	-

6.3.22.3 Attribute Constraints

Name	Definition
`connectedRncId` CO support qualifier	The `farEndEntity` is supported

6.3.22.4 Notifications

See clause 6.7.1 Alarm and configuration notifications.

6.4 Information relationship definitions

6.4.1 ConnectedTo (M)

6.4.1.1 Definition

This represents a bi-directional relationship between the IubLink and Node B (through the NodeBFunction).
The role of the relation shall be mapped to a reference attribute of the IOC. The names of the reference attribute and the role are the same.

6.4.1.2 Roles

Roles of the relation ConnectedTo

Name	Definition
iubLink-NodeBFunction	This role (when present) represents IubLink capability to identify one NodeBFunction. When the role is absent, the IubLink.iubLink-NodeBFunction shall contain no information. When present, it shall contain one NodeBFunction DN.
nodeBFunction-IubLink	This role (when present) represents NodeBFunction capability to identify one IubLink. When the role is absent, the NodeBFunction.nodeBFunction-IubLink shall contain no information. When present, it shall contain one IubLink DN.

6.4.1.3 Constraints

When a particular IubLink identifies a particular NodeBFunction, that particular NodeBFunction must identify the particular IubLink.

6.4.2 AssociatedWith (M)

6.4.2.1 Definition

This represents a bi-directional relation between the IubLink and UtranGenericCell. The role of the relation shall be mapped to a reference attribute of the IOC. The name of the reference attribute shall be the role name.

6.4.2.2 Roles

Roles of the relation AssociatedWith

Name	Definition
iubLink-UtranCell	This role (when present) represents the IubLink capability to identify the set of related child classes of UtranGenericCell. IubLink.iubLink-UtranCell shall carry the set of DN(s) of the child classes of UtranGenericCell.
utranGenericCell-IubLink	This role (when present) represents UtranGenericCell capability to identify one related IubLink. When the role is absent, the UtranGenericCell.utranGenericCell-IubLink shall contain no information. When it is present, it shall contain one IubLink DN.

6.4.2.3 Constraints

When a particular IubLink identifies a particular child class of UtranGenericCell, that particular UtranGenericCell must have identified the particular IubLink.

6.4.3 ExternalUtranNeighbourCellRelation (M)

6.4.3.1 Definition

This represents a unidirectional relation from UtranRelation to the ExternalUtranGenericCell. The role of the relation shall be mapped to a reference attribute, named adjacentCell, of the IOC.

6.4.3.2 Roles

Roles of the relation ExternalUtranNeighbourCellRelation

Name	Definition
utranRelation-externalUtranNeighbourCell	This role (when present) represents the UtranRelation capability to identify one child class of ExternalUtranGenricCell. When this role is present, the UtranRelation.adjacentCell shall contain a DN of one child class of ExternalUtranNeighbourCell.

6.4.3.3 Constraints

This role (for a particular UtranRelation) shall be present if the UtranNeighbourCellRelation of this particular UtranRelation is absent. This role shall be absent if the UtranNeighbourCellRelation of this particular UtranRelation is present.

6.4.4 UtranNeighbourCellRelation (M)

6.4.4.1 Definition

This represents the unidirectional relation from the UtranRelation to UtranGenericCell. The role of the relation shall be mapped to a reference attribute, named adjacentCell, of the IOC.

6.4.4.2 Roles

Roles of the relation UtranNeighbourCellRelation

Name	Definition
utranRelation-utranNeighbourCell	This role (when present) represents the UtranRelation capability to identify one UtranGenericCell. When this role is present, the UtranRelation.adjacentCell shall contain one DN of a child class of UtranGenericCell.

6.4.4.3 Constraints

This role (for a particular UtranRelation) shall be present if the ExternalUtranNeighbourCellRelation of this particular UtranRelation is absent. This role shall be absent if the ExternalUtranNeighbourCellRelation of this particular UtranRelation is present.

6.4.5 AssociatedWith1 (M)

6.4.5.1 Definition

This represents a bi-directional relation between the IubLink and ATMChannelTerminationPoint. The roles of the relation shall be mapped to a reference attribute of the IOCs. The name of the reference attribute shall be the role name.

6.4.5.2 Roles

Roles of the relation AssociatedWith1

Name	Definition
iubLink-ATMChannelTerminationPoint	This role (when present) represents IubLink capability to identify the set of related ATMChannelTerminationPoint. It shall carry the set of ATMChannelTerminationPoint's DN(s).
aTMChannelTerminationPoint-IubLink	This role (when present) represents ATMChannelTerminationPoint capability to identify the set of related IubLink(s). When the role is absent, the ATMChannelTerminationPoint -IubLink shall contain no information. When it is present, it shall contain the set of IubLink DN(s).

6.4.5.3 Constraints

When a particular IubLink identifies a particular ATMChannelTerminationPoint, that particular ATMChannelTerminationPoint must have identified the particular IubLink.

6.4.6 Void

6.4.7 ExternalRncUtranCellRelation (O)

6.4.7.1 Definition

This represents the bi-directional relation between the ExternalUtranGenericCell and ExternalRncFunction. The roles of the relation shall be mapped to a reference attribute of the IOCs. The name of the reference attribute shall be the role name.

6.4.7.2 Roles

Roles of the relation ExternalRncUtranCellRelation

Name	Definition
controllingRnc	This role (when present) represents the ExternalUtranGenericCell capability to identify one related ExternalRncFunction. When it is present, it shall contain one ExternalRncFunction DN.
controlledCellList	This role (when present) represents the ExternalRncFunction capability to identify the set of related child classes of ExternalUtranCell. When it is present, it shall contain the set of DNs of child classes of ExternalUtranGenericCell.

6.4.8 Void

6.4.8.3 Constraints

When a particular UtranGenericCell identifies a particular TmaFunction, that particular TmaFunction must have identified the particular UtranGenericCell.

6.4.9 ConnectedTo1(O)

6.4.9.1 Definition

This represents uni-directional relationship between the EP_Iur and RNC.
The role of the relation shall be mapped to a reference attribute of the IOC.

6.4.9.2 Roles

Roles of the relation ConnectedTo1

Name	Definition
connectedRncId	This role (when present) represents EP_Iur capability to identify one connected RNC. When present, it shall contain one RNC-Id.

6.4.9.3 Constraints

Name	Definition
-	-

6.4.10 ConnectedTo2(0)

6.4.10.1 Definition

This represents uni-directional relationship between the EP_Iur and BSC.
The role of the relation shall be mapped to a reference attribute of the IOC.

6.4.10.2 Roles

Roles of the relation ConnectedTo2

Name	Definition
connectedRncId	This role (when present) represents EP_Iur capability to identify one connected BSC. When present, it shall contain one RNC-Id to indentify BSC. ("RNC-Id" in Ref. 3GPP TS 23.003 [3]).

6.4.10.3 Constraints

Name	Definition
-	-

6.5 Information attribute definitions

6.5.1 Definition and legal values

The following table defines the attributes that are present in several Information Object Classes (IOCs) of the present document.

Attributes

Attribute Name	Definition	Legal Values
adjacentCell	It carries the DN of the UtranGenericCell or the ExternalUtranGenericCell.	
aichPower	The Power of the AICHchannel in an FDD cell, "AICH Power" in Ref. 3GPP TS 25.433 [5].	See "AICH Power" in Ref. 3GPP TS 25.433 [5].
bchPower	The power of the broadcast channel in the FDD mode cell, "BCH Power" in Ref. 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
cellCapabilityContainerFDD	Defined in 3GPP TS25.423 Each bit indicates whether a cell supports a particular functionality.	BITSTRING(32)
cellCapabilityContainerTDD	Defined in 3GPP TS25.423 Each bit indicates whether a cell supports a particular functionality.	BITSTRING(32)
cellIndividualOffset	Defined in 3GPP TS25.331 (25.423). Attribute relevant for HO decision Used to offset measured quantity value.	See "Cell individual offset" in Ref. 3GPP TS 25.331 [9].
cellMode	An attribute that identifies the cell mode.	Type: Enumerated value Range: ("FDD mode", "1.28McpsTDD mode", "3.84McpsTDD mode", "7.68McpsTDD mode")
cellParameterId	This attribute identifies unambiguously the TDD mode cell: 3.84 and 7.68 Mcps TDD - Code Groups, Scrambling Codes, Midambles and Toffset, or 1.28 Mcps TDD - SYNC-DL and SYNC-UL sequences, the scrambling codes and the midamble codes. "Cell Parameter ID" in Ref. TS 25.433 [5]	See "Cell Parameter ID" in Ref. 3GPP TS 25.433 [5].
cId	The attribute is the identifier of a cell in one RNC, "C-id" in Ref. 3GPP TS 25.401 [4] and "C-ID" in Ref. 3GPP TS 25.433 [5].	See "C-ID" in Ref. 3GPP TS 25.433 [5].
closedLoopModelSupportIndicator	Power control, defined in 3GPP TS25.423 The Closed Loop Mode1 Support Indicator indicates whether the particular cell is capable to support Closed loop mode1 or not.	ENUMERATED
connMscNumber	The MSC number of the far end MSC Server connected by the Iu-CS interface for which the end point is modelled, “MSC number” in Ref. 3GPP TS 23.003 [3]	See “MSC number” in Ref. 3GPP TS 23.003 [3]
connectedRncId	The RNC-Id of the far end RNC or BSC connected by the Iur interface for which the end point is modelled, “RNC-Id” in Ref. 3GPP TS 23.003 [3]	See “RNC-Id” in Ref. 3GPP TS 23.003 [3]
connSgsnNumber	The SGSN number of the far end SGSN connected by the Iu-PS interface for which the end point is modelled, “SGSN number” in Ref. 3GPP TS 23.003 [3]	See “SGSN number” in Ref. 3GPP TS 23.003 [3]
dpcModeChangeSupportIndicator	Power control, defined in 3GPP TS25.423 The DPC Mode Change Support Indicator IE indicates that the particular cell is capable to support DPC mode change.	ENUMERATED

deltaQrxlevmin	Cell (re)selection, defined in 3GPP TS25.331 If present, the actual value of Qrxlevmin = Qrxlevmin + DeltaQrxlevmin	See "$Delta_{Qrxlevmin}$" in Ref. 3GPP TS 25.331 [9].
dpchConstantValue	DPCH Constant Value is the power margin in dB used by a UE to set the proper uplink power, "DPCH Constant Value" in Ref. TS 25.433 [5].	See "Constant Value" in Ref. 3GPP TS 25.433 [5].
dwPchPower	DwPCH Power is the power that shall be used for transmitting the DwPCH in a 1.28 Mcps TDD cell, "DwPCH Power" in Ref. 3GPP TS 25.433 [5].	See "DwPCH Power" in Ref. 3GPP TS 25.433 [5].
fachPower	The maximum power of the FACH transport channel that may be used in the cell, "Max FACH Power" in Ref 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
fpachPower	The maximum power of the FPACH channel that shall be used in TDD cell, "FPACH Power" in Ref. 3GPP TS 25.433 [5].	See "FPACH Power" in Ref. 3GPP TS 25.433 [5].
frameOffset	Neighbouring cells monitoring, defined in 3GPP TS25.423 Frame Offset is the required offset between the dedicated channel downlink transmission frames (CFN, Connection Frame Number) and the broadcast channel frame offset (Cell Frame Number). The Frame Offset is used in the translation between Connection Frame Number (CFN) on Iub/Iur and least significant 8 bits of SFN (System Frame Number) on Uu. The Frame Offset is UE and cell specific.	INTEGER(0..255)
hcsPrio	Cell (re)selection for HCS Defined in Ref. 3GPP TS25.331 [9]. This specifies the HCS priority level (0-7) for serving cell and neighbouring cells. HCS priority level 0 means lowest priority and HCS priority level 7 means highest priority.	See "HCS_OFF_{mbms}" in Ref. 3GPP TS 25.331 [9].
hsEnable	A label indicating whether or not HSDPA is enabled in the UTRAN cell. A value of 0 represents that HSDPA is not enabled and a value of 1 represents that HSDPA is enabled.	Type: Integral numeric value Range: (0..1)
hsFlag	A label indicating whether or not HSDPA is supported in the UTRAN cell. A value of 0 indicates that HSDPA is not supported and a value of 1 indicates that HSDPA is supported.	Type: Integral numeric value Range: (0..1)
id	An attribute whose "name+value" can be used as an RDN when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
intraANRSwitch	This attribute determines whether the intra UTRAN ANR function is activated or deactivated. If “on”, the intra UTRAN ANR function may add or remove Intra-UTRAN Neighbour Relations, i.e. add or remove UtranRelation instances from UtranGenericCells of this RncFunction. If “off”, the intra UTRAN ANR function must not add or remove Intra-UTRAN Neighbour Relations, i.e. add or remove UtranRelation instances from UtranGenericCells of this RncFunction.	on, off
iRATANRSwitch	This attribute determines whether the IRAT ANR function is activated or deactivated. If “on”, the IRAT ANR function may add or remove IRAT Neighbour Relations, i.e. add or remove EUtranRelation or GsmRelation instances from UtranGenericCells of this RncFunction. If “off”, the IRAT ANR function must not add or remove IRAT Neighbour Relations, i.e. add or remove EUtranRelation or GsmRelation instances from UtranGenericCells of this RncFunction.	on, off
isChangeForEnergySavingAllowed	This attribute allows to IRPManager to prohibit or allow configuration changes of the cell for ESM purposes by the IRPAgent. This restriction also applies to instances name contained in such cells. Their attribute values cannot be changed by the IRPAgent.	yes, no

isESCoveredBy	The value of the attribute is configured by the IRPManager and is not changed by the IRPAgent. It indicates whether the adjacentCell according to this planning provides no, partial or full Inter-RAT coverage for the cell which name-contains the UtranRelation instance. Adjacent cells with this attribute equal to “yes” are recommended to be considered as candidate cells to take over the coverage when the original cell is about to be transferred to energySaving state. The entirety of adjacent cells with this property equal to “partial” are recommended to be considered as entirety of candidate cells to take over the coverage when the original cell is about to be transferred to energySaving state.	No, partial, yes
lac	Location Area Code, "LAC" in Ref. 3GPP TS 23.003 [3].	See "LAC" in Ref. 3GPP TS 25.413 [23].
localCellId	The Local Cell id is used to uniquely identify the set of resources defined in a Node B to support a cell. It must be unique in Node B at a minimum, but may be unique in UTRAN. . Local Cell Identifier" Ref. 3GPP TS 25.401 [4], "Local Cell ID" in 3GPP TS 25.433 [5].	See "Local Cell ID" in Ref. 3GPP TS 25.433 [5].
maximumAllowedUlTxPower	Cell (re)selection, defined in Ref. 3GPP TS25.331 [9]. This information element indicates the maximum allowed uplink transmit power.	See "Maximum allowed UL TX power" in Ref. 3GPP TS 25.331 [9]. A single integral value in dBm. Range: (-50..33).
maximumTransmissionPower	The maximum transmission power of a cell. It is the maximum power for all downlink channels added together, that is allowed to be used simultaneously in a cell, "Maximum Transmission Power" in Ref. 3GPP TS 25.433 [5].	See "Maximum Transmission Power" in Ref. 3GPP TS 25.433 [5].
mcc	Mobile Country Code, MCC (part of the PLMN Identifier") in, Ref. 3GPP TS 23.003 [3].	See "MCC" in "PLMN identity" in Ref. 3GPP TS 25.413 [21].
mnc	Mobile Network Code, "MNC" (part of the PLMN Identity") in Ref. 3GPP TS 23.003 [3].	See "MNC" in "PLMN identity" in Ref. 3GPP TS 25.413 [23].
numOfHspdschs	In FDD: the number of codes at the defined spreading factor (SF=16), within the complete code tree. See Ref. 3GPP TS 25.433 [5]. In TDD: the number of HS-PDSCHs in a Cell; Ref. 3GPP TS 25.433 [5].	Type: INTEGER Range: (0..15) for FDD mode, Range: (0..95) for TDD mode
numOfHsscchs	The number of HS-SCCHs for one cell. Ref. 3GPP TS 25.433 [5].	Type: INTEGER Range: (1..32)
pchPower	The power of PCH transport channel in the cell, "PCH Power" in Ref 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
penaltyTime	Cell (re)selection for HCS, defined in 3GPP TS25.331 (TS 25.304) This specifies the time duration for which the TEMPORARY_OFFSET is applied for a neighbouring cell.	See "Penalty_time" in Ref. 3GPP TS 25.331 [9].
pichPower	The Power of the PICH channel in the cell, "PICH Power" in Ref. 3GPP TS 25.433 [5].	See "PICH Power" in Ref. 3GPP TS 25.433 [5].
primaryCcpchPower	The power of the primary CCPCH channel in the TDD cell, "PCCPCH Power" in Ref. 3GPP TS 25.433 [5].	See "PCCPCH Power" in Ref. 3GPP TS 25.433 [5].
primaryCpichPower	The power of the primary CPICH channel in the FDD mode cell, "Primary CPICH Power" in Ref. 3GPP TS 25.433 [5].	See "Primary CPICH Power" in Ref. 3GPP TS 25.433 [5].
primarySchPower	The power of the primary synchronisation channel in the FDD mode cell, "Primary SCH Power” in Ref. 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
primaryScramblingCode	The primary DL scrambling code used by the FDD mode cell, "Primary Scrambling Code" in Ref. 3GPP TS 25.433 [5].	See "Primary Scrambling Code" in Ref. 3GPP TS 25.433 [5].
qhcs	Cell (re)selection for HCS, defined in Ref. 3GPP TS25.331 [9]. This specifies the quality threshold levels for applying prioritised hierarchical cell re-selection	See "Qhcs" in Ref. 3GPP TS 25.331 [9]

qqualMin	Cell (re)selection, defined in Ref. 3GPP TS25.331 [9]. This specifies the minimum required quality level in the cell in dB. It is only applicable for FDD cells.	See "QqualMin" in Ref. 3GPP TS 25.331 [9].
qrxlevMin	Cell (re)selection, defined in Ref. 3GPP TS25.331 [9]. This specifies the minimum required RX level in the cell in dBm.	See "QrxlevMin" in Ref. 3GPP TS 25.331 [9].
rac	Routing Area Code, "RAC" in Ref. 3GPP TS 23.003 [3].	See "RAC" in Ref. 3GPP TS 25.413 [23].
readSFNIndicator	Neighbouring cells monitoring, defined in Ref. 3GPP TS25.331 [9].	See "Read SFN indicator" in Ref. 3GPP TS 25.331 [9]
referenceTimeDifferenceToCell	Neighbouring cells monitoring, defined in Ref. 3GPP TS25.331 [9]. In the System Information message, the reference time difference to cell indicates the timing difference between the primary CCPCH of the current cell and the primary CCPCH of a neighbouring cell. In the Measurement Control message, the reference time difference to cell indicates the timing difference between UE uplink transmission timing and the primary CCPCH of a neighbouring cell.	See "Reference time difference to cell" in Ref. 3GPP TS 25.331 [9]. A single integral value in chips. Range: (0..38400) by steps of 40, 256 or 2560.
relatedAntennaList	This is an attribute to list the DNs of AntennaFunction(s) (see TS 32.792[24]) that support the UtranGenericCell.	See "relatedAntennaList" in Ref. 3GPP TS 32.792 [24]
relatedSectorEquipment	This is an attribute to the DN of SectorEquipment (see TS 32.792[24]) that support the UtranGenericCell.	See "relatedSectorEquipment" Ref. 3GPP TS 32.792 [24].
relatedTmaList	This is an attribute to list the DNs of TmaFunction(s) (see TS 32.792[24]) that support the UtranGenericCell.	See "relatedTmaList" Ref. 3GPP TS 32.792 [24].
restrictionStateIndicator	Cell Access Control, defined in 3GPP TS25.423 The Restriction state indicator is the identifier indicates whether the cell is "Cell Reserved for Operator Use" or not. It is provided by DRNS and reported to SRNC.	ENUMERATED
rncId	IOC ExternalUtranGenericCell and ExternalRncFunction: Unique RNC ID for the associated RNC, "RNC Id" in Ref. 3GPP TS 23.003 [3]. IOC RncFunction: Unique RNC ID, "RNC Id" in Ref. 3GPP TS 23.003 [3].	See "RNC-ID" in Ref. 3GPP TS 25.413 [23].
sac	Service Area Code, "SAC" in Ref. 3GPP TS 23.003 [3].	See "SAC" in Ref. 3GPP TS 25.413 [23].
schPower	The power of the synchronisation channel in 3.84 Mcps TDD cell, "SCH Power" in Ref. 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
schTimeSlot	The SCH Time Slot IE represents the first time slot (k) of a pair of time slots inside a Radio Frame that is assigned to the Physical Channel SCH, "SCH Time Slot" in Ref. 3GPP TS 25.433 [5].	See "SCH Time Slot" in Ref. 3GPP TS 25.433 [5].
sctdIndicator	This attribute indicates whether SCTD is used, "SCDT Indicator" in Ref. 3GPP TS 25.433 [5].	See "SCDT Indicator" in Ref. 3GPP TS 25.433 [5].
secondarySchPower	The power of the secondary synchronisation channel in the FDD mode cell, "Secondary SCH Power in Ref. 3GPP TS 25.433 [5].	See "DL Power" in Ref. 3GPP TS 25.433 [5].
sharNetTceMappingInfoList	This attribute includes a list of elements. Each element is a list of shared PLMN Id (called "PLMN Target"), TCE ID and the corresponding TCE IP address. When several PLMNs are supported and Logged MDT is requested, this attribute is used to translate From the TCE IP Address to TCE ID when a Logged MDT is ordered to the UE and to translate the TCE ID to TCE IP address when the UE has sent the log to the network.	See "PLMN Target", "Trace Collection Entity Address" and "Trace Collection Entity Id" in 3GPP TS 32.422 [25].
siptoSupported	This attribute indicates whether the RNC supports SIPTO function. A value of 0 represents that SIPTO is not supported and a value of 1 represents that SIPTO is supported (by the RNC).	Type: Integral numeric value Range: (0..1)

snaInformation	Shared Networks Access Control, defined in 3GPP TS25.423. This information element contains a list of Shared Network Areas, identified by the Shared Network Area Code (SNAC) which a certain cell belongs to.	
sttdSupportIndicator	Power control, defined in 3GPP TS25.423 The STTD Support Indicator indicates whether the STTD can be applied to DL DPCH and F-DPCH in the cell or not.	ENUMERATED
syncCase	The SCH and PCCPCH in a TDD cell are mapped on one or two downlink slots per frame. There are two cases of Sync Case as follows: SCH and PCCPCH allocated in a single TS#k SCH allocated in two TS: TS#k and TS#k+8. PCCPCH allocated in TS#k "Synch Case" in Ref. 3GPP TS 25.433 [5].	See "Sync Case" in Ref. 3GPP TS 25.433 [5].
tceIDMappingInfoList	This attribute includes a list of TCE ID and the corresponding TCE IP address. It is used in Logged MDT case to provide the information to the RNC to get the corresponding TCE IP address when there is an MDT log received from the UE. This attribute is used if only one PLMN is supported.	See “Trace Collection Entity Address” and “Trace Collection Entity Id” in 3GPP TS 32.422 [25].
temporaryOffset1	Cell (re)selection for HCS, defined in 3GPP TS25.331 (TS 25.304) This specifies the offset applied to the H and R criteria for a neighbouring cell for the duration of PENALTY_TIME. It is used for TDD and GSM cells and for FDD cells in case the quality measure for cell selection and re-selection is set to CPICH RSCP	See "Temporary_offset1" in Ref. 3GPP TS 25.331 [9].
temporaryOffset2	Cell (re)selection for HCS, defined in 3GPP TS25.331 (TS 25.304) This specifies the offset applied to the H and R criteria for a neighbouring cell for the duration of PENALTY_TIME. It is used for FDD cells in case the quality measure for cell selection and re-selection is set to CPICH Ec/No.	See "Temporary_offset2" in Ref. 3GPP TS 25.331 [9.]
timeSlotForSch	The Time Slot represents the time interval assigned to a Physical Channel referred to the start of a Radio Frame, "SCH Time Slot" in Ref. 3GPP TS 25.433 [5].	See "SCH Time Slot" in Ref. 3GPP TS 25.433 [5].
timeSlotListHcr	This attribute defines the time slot configuration information in the TDD cell. It is a list which contains 15 (for 3.84 or 7.68 Mcps TDD cell) items. Within each item there are three parts: timeSlotId, timeSlotDirection and timeSlotStatus. (Ref. 3GPP TS 25.433 [5]).	timeSlotId: Type: Integral numeric value Range: (0..14); timeSlotDirection: Type: Enumerated value Range: (Ul, Dl); timeSlotStatus: Type: Enumerated value Range: (Active, Not active)
timeSlotListLcr	This attribute defines the time slot configuration information in the TDD cell. It is a list which contains 7 (for 1.28 Mcps TDD cell) items. Within each item there are three parts: timeSlotId, timeSlotDirection, timeSlotStatus, corresponding to Time Slot LCR, Time Slot Direction, Time Slot Status (Ref. 3GPP TS 25.433 [5]). If multiple frequencies exist within the cell, the timeSlotList indicates the Time Slot configuration of Primary Frequency.	timeSlotId: Type: Integral numeric value Range: (0..6); timeSlotDirection: Type: Enumerated value Range: (Ul, Dl); timeSlotStatus: Type: Enumerated value Range: (Active, Not active)

tmaFunctionList	This is a referential attribute to list the DNs of TmaFunction(s) that support the UtranGenericCell.	A list of DNs as defined in TS 32.300 [13].
tstdIndicator	This attribute indicates whether TSTD is used, TSDT Indicator" in Ref. 3GPP TS 25.433 [5].	See "TSDT Indicator" in Ref. 3GPP TS 25.433 [5].
txDiversityIndicator	Defined in 3GPP TS25.331 (25.423) This attribute indicates whether following conditions are satisfied: Primary CPICH is broadcast from two antennas STTD is applied to Primary CCPCH TSTD is applied to Primary SCH and Secondary SCH	See "TX Diversity Indicator" in Ref. 3GPP TS 25.331 [9]
uarfcn	The UTRA absolute Radio Frequency Channel number for TDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]). For 1.28Mcps TDD, if multiple frequencies exist within the cell, the uarfcn indicates the frequency of Primary Frequency.	Type : Integral numeric Value Range: (0..16383)
uarfcnLCRList	For 1.28 Mcps TDD, if multiple frequencies exist within the cell, this is a list of the UARFCN and Time Slot configuration information of the Secondary Frequencies. Specifically, within each item in the list there are two main parts: uarfcn and timeSlotListLcr. The second part is a list of elements which have the sub-elements: timeSlotId, timeSlotDirection and timeSlotStatus. These attributes correspond to “UARFCN, Time Slot LCR, Time Slot Direction and Time Slot Status” (Ref. 3GPP TS 25.433 [5]).	For “uarfcn, timeSlotId, timeSlotDirection, timeSlotStatus”, see “UARFCN, Time Slot LCR, Time Slot Direction, Time Slot Status” in Ref. 3GPP TS 25.433 [5]. For maximum number of the Secondary Frequencies per cell, see " maxFrequencyinCell-1" in Ref. 3GPP TS 25.433 [5].
uarfcnDl	The DL UTRA absolute Radio Frequency Channel number for FDD mode cell, "UARFCN” in Ref. 3GPP TS 25.433 [5].	See "UARFCN" in Ref. 3GPP TS 25.433 [5].
uarfcnUl	The UL UTRA absolute Radio Frequency Channel number for FDD mode cell, "UARFCN” in Ref. 3GPP TS 25.433 [5].	See "UARFCN" in Ref. 3GPP TS 25.433 [5].
uraList	A list of UTRAN Registration Area identities, which an UtranCell can belong to, "URA identity" in Ref. 3GPP TS 25.331 [9].	For URA, see "URA identity" in Ref. 3GPP TS 25.331[9], subclause 10.3.2.6. For maximum number of URAs per cell, see "maxURA" in Ref. 3GPP TS 25.331 [9], subclause 10.3.10.
isRemoveAllowed	This indicates if the subject UtranRelation can be removed (deleted) or not. If ‘yes’, the subject UtranRelation instance can be removed (deleted). If ‘no’, the subject UtranRelation instance shall not be removed (deleted) by any entity but an IRPManager.	yes , no

isHOAllowed	This indicates if HO is allowed or prohibited. If 'yes', handover is allowed from source cell to target cell. The source cell is identified by the name-containing UtranGenericCell or EUtranGenericCell of the UtranRelation that has the isHOAllowed. The target cell is referenced by the UtranRelation that has this isHOAllowed. If 'no', handover shall not be allowed.	yes , no

6.5.2 Constraints

None.

6.6 Void

6.7 Common Notifications

6.7.1 Alarm and configuration notifications

Name	Qualifier	Notes
notifyAckStateChanged	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAttributeValueChange	O	
notifyChangedAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyClearedAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyNewAlarm	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyObjectCreation	O	
notifyObjectDeletion	O	
notifyComments	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyAlarmListRebuilt	See Alarm IRP (3GPP TS 32.111-2 [11])	
notifyPotentialFaultyAlarmList	See Alarm IRP (3GPP TS 32.111-2 [11])	

Note that these notifications are issued based on occurrences on the IRPAgent IOC and not on occurrences on other IOCs.

6.7.2 Configuration notifications

Name	Qualifier	Notes
notifyAttributeValueChange	O	
notifyObjectCreation	O	
notifyObjectDeletion	O	

Note that these notifications are issued based on occurrences on the IRPAgent IOC and not on occurrences on other IOCs.

Annex A (informative):
Void

Annex B (informative): RET Control Architecture

The Itf-N provides an abstraction of resources to allow the monitor and control of physical resource from the network level management systems. For RET, the antenna tilt is controlled via a control unit which is located within the NodeB (from a management perspective). The control unit sends commands to actuators located at the tower top, in order to read, and to adjust antenna tilt values.

The `AntennaFunction` class will report failures and malfunctions of either the control unit, or the tilt.

There are several configurations of antennae. Some support the transmission of several frequencies from a single radome while others are deployed as an array in order to provide effective coverage.

Hence in the UTRAN model there is an N:M relationship between the `UtranCell` class and the `AntennaFunction` class, permitting the model to support all possibilities. The figure B.1 below illustrates the RET architecture.

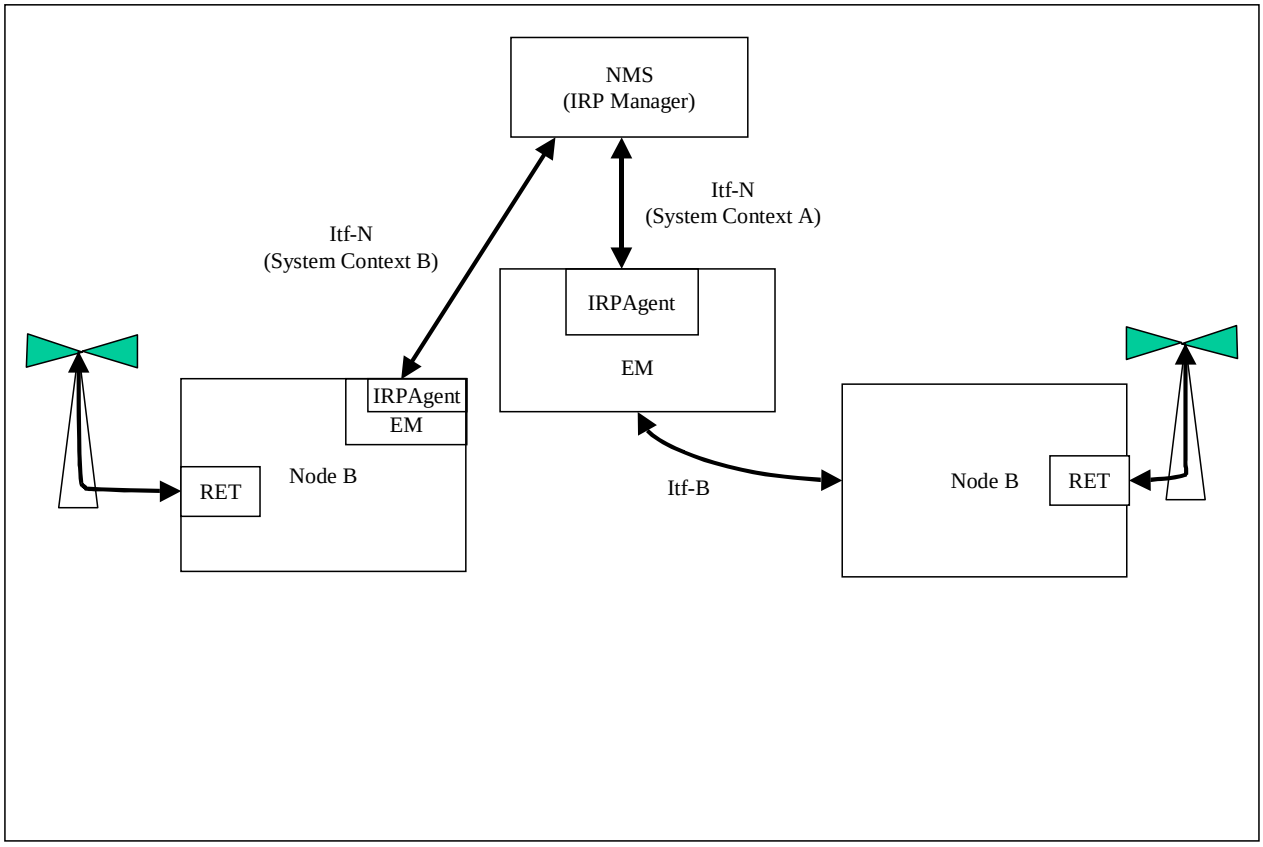


Figure B.1: Overall RET architecture

Annex C (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Cat**	**Old**	**New**
Jun 2001	SP-12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	--	2.0.0	4.0.0
Jun 2002	SP-16	SP-020303	0001	--	Corrections of reference in figure 6.2 and of attribute descriptions in UtranRelation in 32.642 (UTRAN network resources IRP: NRM)	F	4.0.0	4.1.0
Jun 2002	SP-16	SP-020304	0002	--	Correction of supported IRP in system context	F	4.0.0	4.1.0
Sep 2002	SP-17	SP-020490	0003	--	UML corrections	F	4.1.0	4.2.0
Sep 2002	SP-17	SP-020492	0004	--	Add the new IRP IS methodology defined in 32.102	F	4.2.0	5.0.0
Sep 2002	SP-17	SP-020492	0005	--	Add State Management	B	4.2.0	5.0.0
Dec 2002	SP-18	SP-020748	0006	--	Inclusion of valid values and ranges for UTRAN Cell parameters	F	5.0.0	5.1.0
Jan 2003	--	--	--	--	Accepted all revision marks	--	5.1.0	5.1.1
Jun 2003	SP-20	SP-030282	0008	--	Include notification tables	A	5.1.1	5.2.0
Jun 2003	SP-20	SP-030282	0010	--	Correction of UML diagram vsDataContainer Containment/Naming and Association in UTRAN NRM	A	5.1.1	5.2.0
Jun 2003	SP-20	SP-030283	0012	--	Deletion of UTRAN attribute relationType	A	5.1.1	5.2.0
Dec 2003	SP-22	SP-030715	0014	--	Correction in attribute description for "maximumTransmissionPower" to remove dual interpretation - Align with RAN3's 25.433	A	5.2.0	5.3.0
Dec 2003	SP-22	SP-030646	0016	--	Correction of the number of possible URAs from 1 to 8	A	5.2.0	5.3.0
Dec 2003	SP-22	SP-030641	0017	--	Add missing notification notifyPotentialFaultyAlarmlist	F	5.2.0	5.3.0
Dec 2003	SP-22	SP-030643	0018	--	Remove redundant VsDataContainer Containment UML - Now covered by 32.622	F	5.2.0	5.3.0
Mar 2004	SP-23	SP-040129	0019	--	Addition of new attributes for support of both FDD and TDD modes	B	5.3.0	6.0.0
Jun 2004	SP-24	SP-040254	0021	--	Correction of the supported UMTS frequencies	A	6.0.0	6.1.0
Sep 2004	SP-25	SP-040584	0022	--	Add support for the state change notification in UTRAN network resources IRP NRM	B	6.1.0	6.2.0
Sep 2004	SP-25	SP-040595	0023	--	Include ATM in CM UTRAN network resources IRP NRM	B	6.1.0	6.2.0
Sep 2004	SP-25	SP-040585	0026	--	Align with the IRP IS template (32.151) and IRP IS UML repertoire (32.152)	F	6.1.0	6.2.0
Sep 2004	SP-25	SP-040587	0027	--	Add support for Remote control of Electrical Tilting (RET) antenna CR not implementable (UML conflict) New CR028 SA#26 approved	B	6.1.0	6.2.0
Dec 2004	SP-26	SP-040810	0028	--	Add AntennaFunction class and attributes to support RET (Remote control of Electrical Tilting)	B	6.2.0	6.3.0
Dec 2004	SP-26	SP-040810	0029	--	Add support for the state change notification	B	6.2.0	6.3.0
Mar 2005	SP-27	SP-050048	0032	--	Align with SA2's 23.221, for allowing only CS CN in a PLMN	A	6.3.0	6.4.0
Mar 2005	SP-27	SP-050048	0033	--	Add missing definition of IOC ExternalRncFunction	F	6.3.0	6.4.0
Mar 2005	SP-27	SP-050048	0034	--	Amendments to UTRAN NRM for RET	F	6.3.0	6.4.0
Sep 2005	SP-29	SP-050461	0035	--	Add attributes for RET antennas systems - Align with TR 32.804 & RAN specs	F	6.4.0	6.5.0
Mar 2006	SP-31	SP-060102	0036	--	Correct relationships for external Information Object Classes (IOCs)	F	6.5.0	6.6.0
Jun 2006	SP-32	SP-060415	0037	1	Correct the definition of longitude	F	6.6.0	6.7.0
Jun 2006	SP-32	SP-060259	0038	--	Add configuration parameters for radio channel power	B	6.6.0	7.0.0
Mar 2007	SP-35	SP-070046	0020a	--	Revise the Object Model in UTRAN network resources IRP Network Resource Model	B	7.0.0	7.1.0
Jun 2007	SP-36	SP-070282	0039	--	Add control and configuration of Tower Mounted Amplifiers - Align with RAN3 25.466	B	7.1.0	7.2.0
Jun 2007	SP-36	SP-070276	0040	--	Add missing attribute descriptions to the Utran NRM - All attributes visible only over Itf-p2p are marked CO (conditional/ optional)	F	7.1.0	7.2.0
Dec 2007	SP-38	SP-070733	0043	--	Add write support for TMA Additional Data	F	7.2.0	7.3.0
Dec 2007	SP-38	SP-070740	0044	--	Correct cardinality numbers regarding transient states - Align with 32.152	C	7.3.0	8.0.0
Mar 2008	SP-39	SP-080058	0046	--	Correct wrongly supported RET attributes - Align with 25.463	A	8.0.0	8.1.0
Mar 2008	SP-39	SP-080058	0048	--	Add missing multi-frequency attributes for 1.28Mcps TDD - Align with 25.433	A	8.0.0	8.1.0
Jun 2008	SP-40	SP-080328	0050	--	Correction of UTRAN Cell attributes - Align with 25.433	A	8.1.0	8.2.0
Jun 2008	SP-40	SP-080329	0051	--	Add end point model for Iu-CS and Iu-PS interfaces	B	8.1.0	8.2.0
Dec 2009	SP-46	SP-090719	0052	--	Correction of association diagrams and the role of 'AssociatedWith'	F	8.2.0	9.0.0
Sep 2010	SP-49	SP-100487	0055	--	Correcting inconsistencies in the specification	A	9.0.0	9.1.0
Sep 2010	SP-49	SP-100489	0053	--	Addition of EP_Iur information object class	B	9.1.0	10.0.0
Dec 2010	SP-50	SP-100878	0058	-	Correcting the inconsistent support qualifier of userLabel	A	10.0.0	10.1.0
Dec 2010	SP-50	SP-100833	0059	1	Add the missing value range of maximumAllowedUlTxPower and referenceTimeDifferenceToCell - Align with RAN2 TS 25.331	F	10.0.0	10.1.0
Dec 2010	SP-50	SP-100750	0060	1	Add siptoSupported attribute to RNCFunction	B	10.0.0	10.1.0
Dec 2010	SP-50	SP-100833	0061	2	Correcting the definition of AssociatedWith1	F	10.0.0	10.1.0
Mar 2011	SP-51	SP-110095	0062	-	Methodology clean-up of Configuration Management; UTRAN network resources IRP; Network Resource Model	F	10.1.0	10.2.0
Mar 2011	SP-51	SP-110096	0063	2	Removing AntennaFunction and TmaFunction from UTRAN NRM	F	10.1.0	10.2.0
Mar 2011	SP-51	SP-110102	0066	1	Adding TCE address and TCE ID mapping information to RNCFunction	B	10.1.0	10.2.0
Dec 2011	SP-54	SP-110704	0070	2	Add Neighbour cell Relation from UTRAN towards E-UTRAN	A	10.2.0	10.3.0

Dec 2011	SP-54	SP-110704	0073	2	Add management of IRAT ANR from E-UTRAN to UTRAN	A	10.2.0	10.3.0
Dec 2011	SP-54	SP-110719	0074	2	Add management of IRAT ANR from E-UTRAN to UTRAN, plus UTRAN Intra-RAT ANR	B	10.3.0	11.0.0
Mar 2012	SP-55	SP-120057	0075	-	Add management of UTRAN Intra-RAT ANR	F	11.0.0	11.1.0
Jun 2012	SP-56	SP-120372	0077	1	Add ANR switch management solution	B	11.1.0	11.2.0
Sep-2012	SP-57	SP-120573	0078	1	Add support for Inter-RAT Energy Saving Management	B	11.2.0	11.3.0
Dec-2012	SP-58	SP-120796	0082	1	Addition of Network Sharing for MDT	C	11.3.0	11.4.0
Sep-2013					Editorial changes (MCC):misspellings,wrong abbreviations,wrong capital letters		11.4.0	11.4.1

History

Document history		
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