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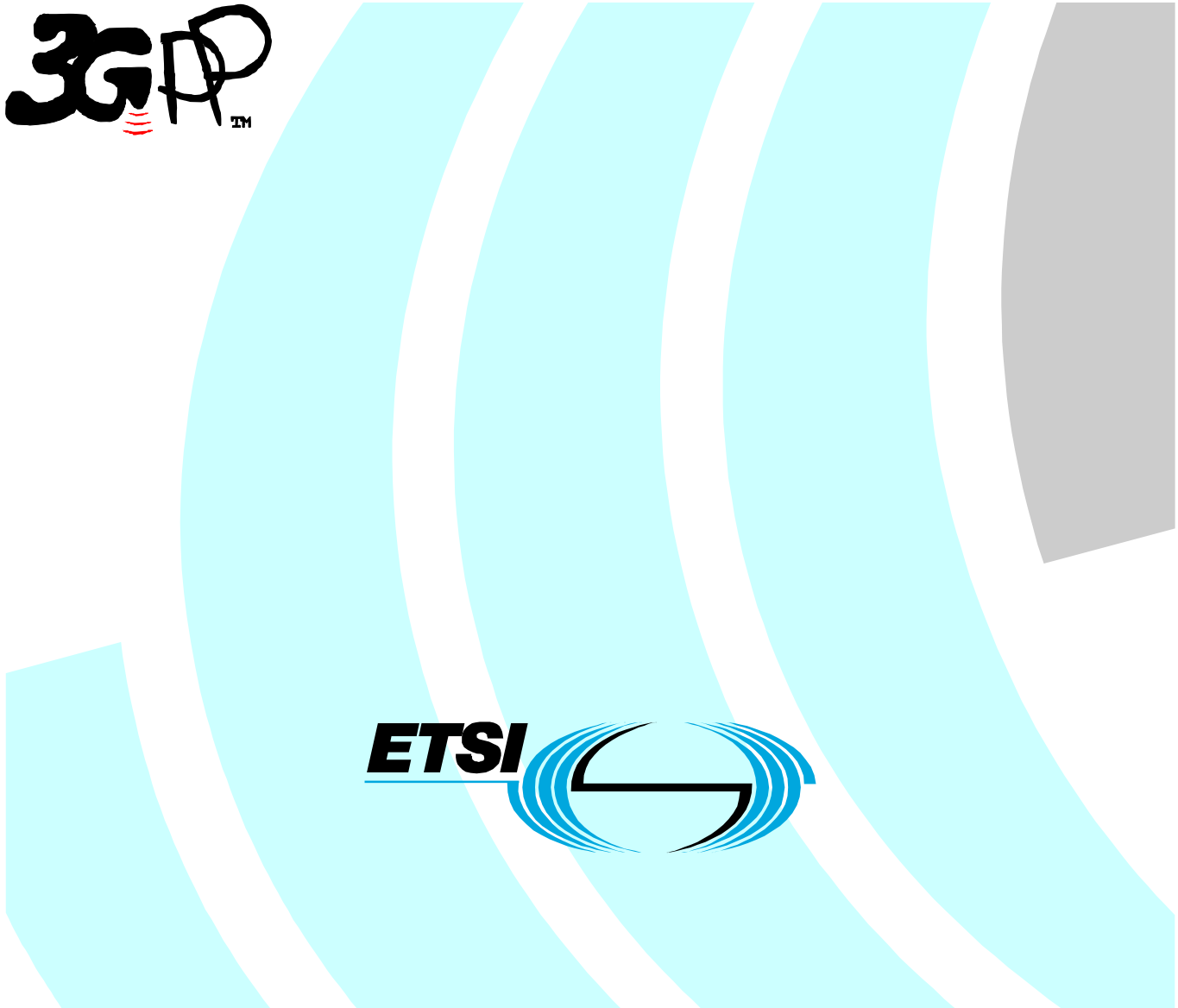
Technical Specification

Universal Mobile Telecommunications System (UMTS);
Telecommunication management;
Configuration Management (CM);
UTRAN network resources Integration Reference Point (IRP):
Network Resource Model (NRM)
(3GPP TS 32.642 version 7.1.0 Release 7)



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Foreword

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Contents

Foreword

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

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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)".

32.643: "Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

32.645: "Configuration Management (CM); UTRAN network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition

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 (NRs), 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.

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

1 Scope

The present document is part of an Integration Reference Point (IRP) named "UTRAN Network Resources IRP", through which an "IRPAgent" (typically an Element Manager or Network Element) can communicate Configuration Management information to one or several "IRPManagers" (typically Network Managers) concerning UTRAN resources. The "UTRAN Network Resources IRP" comprises a set of specifications defining Requirements, a protocol neutral Network Resource Model (NRM) and corresponding Solution Set(s).

The present document specifies the protocol neutral UTRAN Network Resources IRP: Network Resource Model. It reuses relevant parts of the generic NRM in TS 32.622 [16], either by direct reuse or sub-classing, and in addition to that defines UTRAN specific Information Object Classes.

The Configuration Management (CM) area is very large. The intention is to split the specification of the related interfaces in several IRPs – as described in the Introduction clause above. An important aspect of such a split is that the Network Resource Models (NRMs) defined in different IRPs containing NRMs are consistent, and that NRMs supported by an IRPAgent implementation can be accessed as one coherent model through one IRP Information Service (IS).

To summarize, the present document has the following main purpose:

to define the applied UTRAN specific NRM, based on the generic NRM in 3GPP TS 32.622 [16].

In order to access the information defined by this NRM, an IRP IS is needed, such as the Basic CM IRP IS (3GPP TS 32.602 [17]) or the Bulk CM IRP IS (3GPP TS 32.612 [18]). However, which IS that is applicable is outside the scope of the present document.

The present document (NRM specification) is related to the IS in 3GPP TS 32.672 V6.0.X [8].

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] 3GPP TR 25.802: "Remote control of electrical tilting antennas".

[20] 3GPP TS 23.032: "3rd Generation Partnership Project; Technical Specification Group Core Network; Universal Geographical Area Description (GAD)".

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.

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
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	Network Resource
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
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

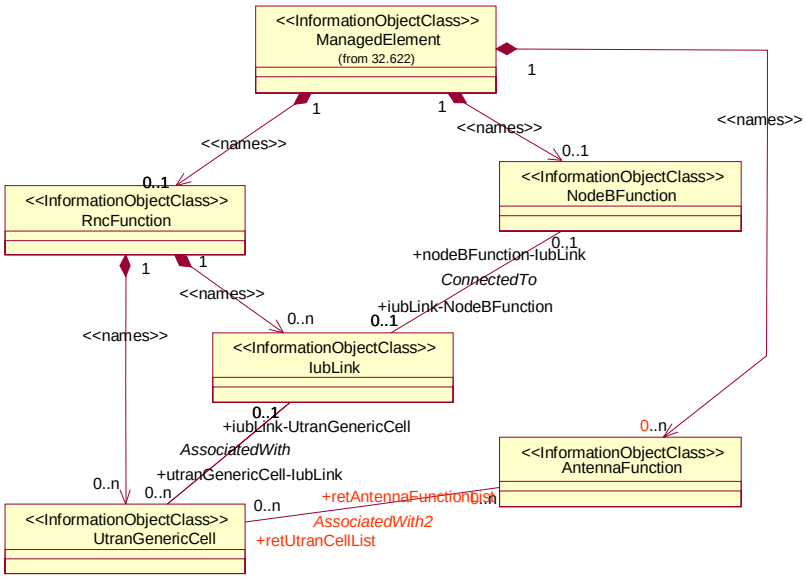
Label reference	Local label
3GPP TS 32.622 [16], IOC, ManagedElement	ManagedElement
3GPP TS 32.622 [16], IOC, ManagedFunction	ManagedFunction
3GPP TS 32.622 [16], IOC, MeContext	MeContext
3GPP TS 32.622 [16], IOC, SubNetwork	SubNetwork
3GPP TS 32.622 [16], IOC, Top	Top
3GPP TS 32.622 [16], IOC, VsDataContainer	VsDataContainer
3GPP TS 32.652 [6], IOC, ExternalGSMCell	ExternalGSMCell
3GPP TS 32.652 [6], IOC, GsmCell	GsmCell
3GPP TS 32.652 [6], IOC, GsmRelation	GsmRelation
3GPP TS 32.652 [6], relation, ExternalGsmNeighbourCellRelation	ExternalGsmNeighbourCellRelation
3GPP TS 32.652 [6], relation, GsmNeighbourCellRelation	GsmNeighbourCellRelation
3GPP TS 32.672 [8], attribute, operationalState	operationalState

6.2 Class diagram

6.2.1 Attributes and relationships

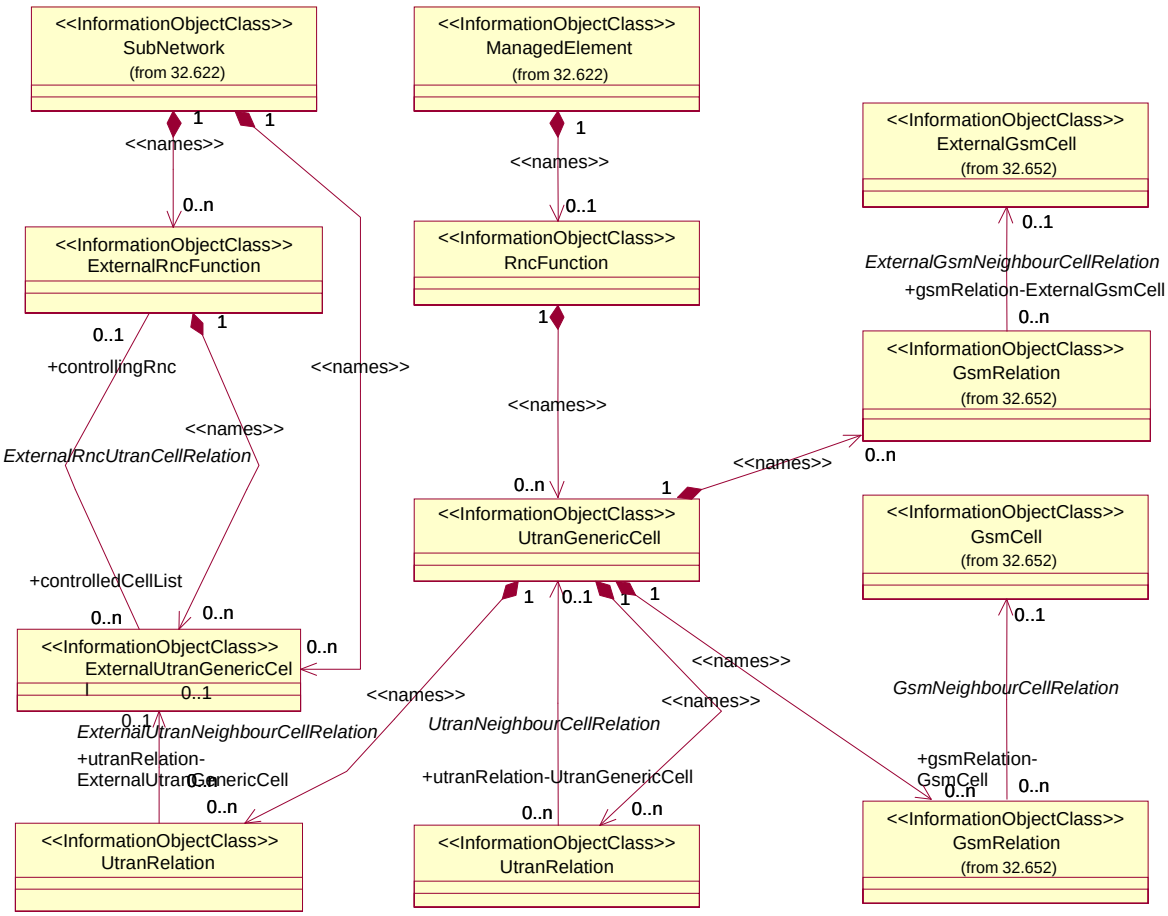
This clause depicts the set of IOCs that encapsulate information relevant for this service. This clause provides the overview of all information object classes in UML. Subsequent clauses provide more detailed specification of various aspects of these information object classes.

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 represent transient as well as steady state numbers, and reflect all managed object creation and deletion scenarios.
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.

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



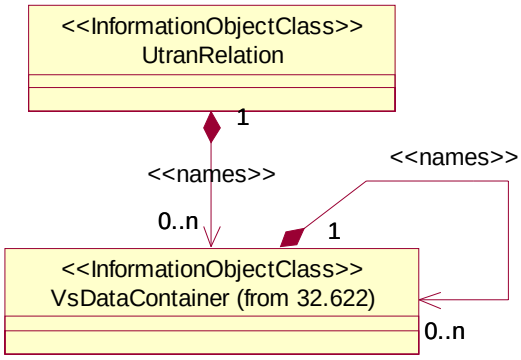
NOTE 1: The listed cardinality numbers represent transient as well as steady state numbers, and reflect all managed object creation and deletion scenarios.

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.

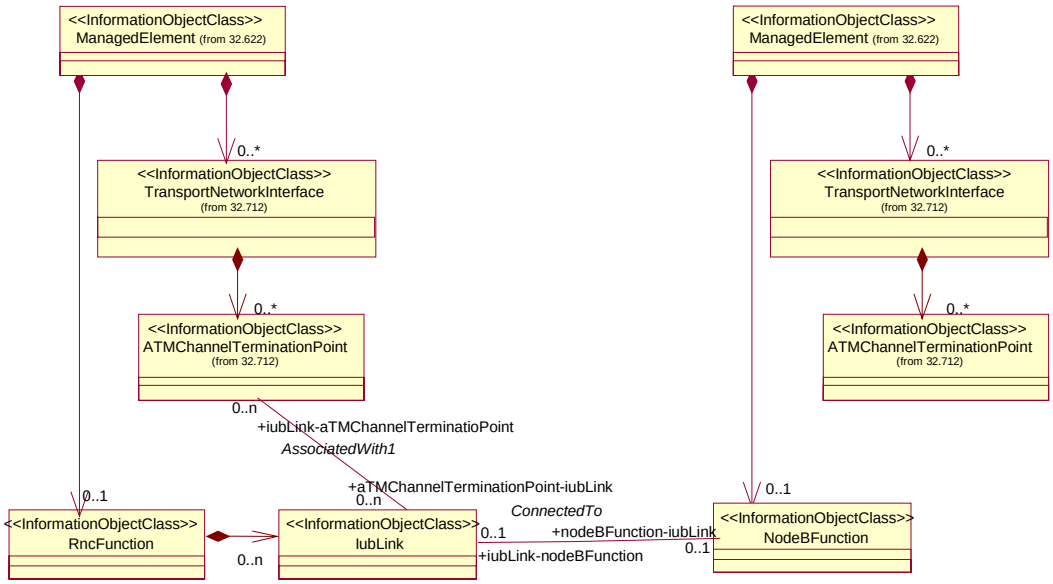
NOTE 4: `ExternalUtranGenericCell` is contained under `SubNetwork` or `ExternalRncFunction`.

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



NOTE 1: The listed cardinality numbers represent transient as well as steady state numbers, and reflect all managed object creation and deletion scenarios.
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 `ATMChannelTermiationPoint` 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 representing a cell could have a format like:

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

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.

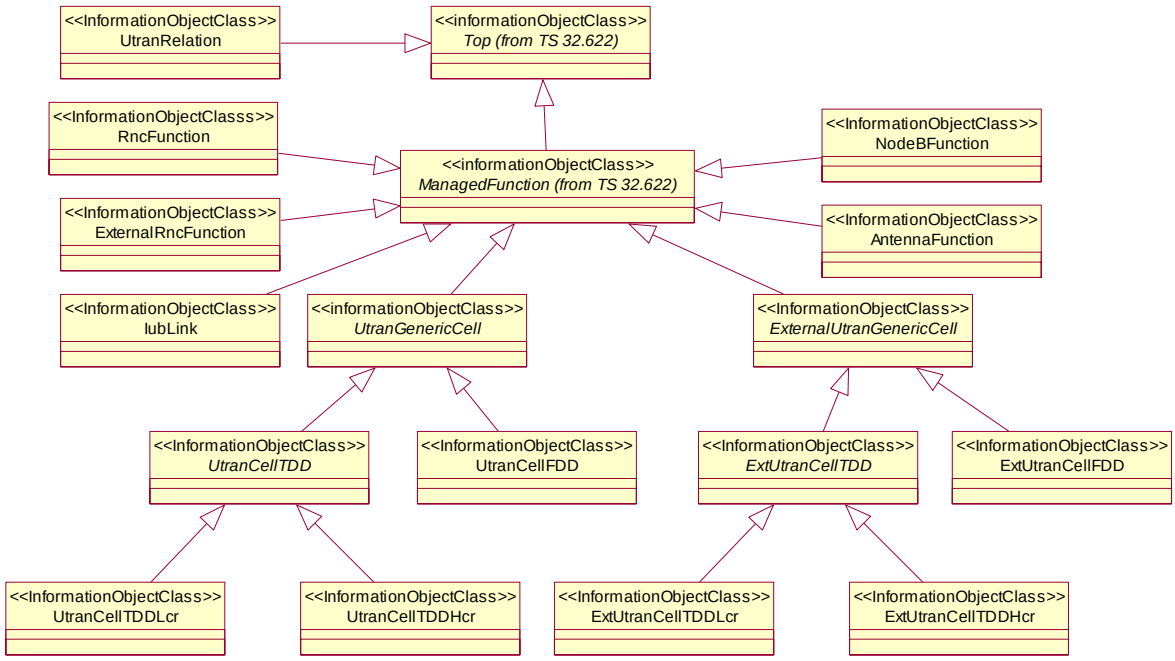


Figure 6.2.2.1: UTRAN NRM Inheritance Hierarchy

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
rncFunctionId	+	M	M	-
userLabel	+	M	M	M
mcc	+	M	M	M
mnc	+	M	M	M
rncId	+	M	M	M

6.3.1.3 Notifications

Notifications of RncFunction

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])	

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
nodeBFunctionId	+	M	M	-
userLabel	+	M	M	M
nodeBFunction-IubLink	+	M	M	-

6.3.2.3 Notifications

Notifications of NodeBFunction

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])	

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
iubLinkId	+	M	M	-
userLabel	+	M	M	M
iubLink-UtranCell	+	M	M	M
iubLink-NodeBFunction	+	M	M	-
iubLink-ATMChannelTerminationPoint	+	M	M	-

6.3.4.3 Notifications

Notifications of IubLink

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])	

6.3.5 UtranRelation

6.3.5.1 Definition

The UtranRelationIOC contains radio network related parameters for the relation to the UtranGenericCell or ExternalUtranGenericCell IOC.

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
utranRelationId	+	M	M	-
adjacentCell	+	M	M	M

6.3.5.3 Attribute constraints

Void.

6.3.5.4 Notifications

Notifications of UtranRelation

Name	Qualifier	Notes
notifyAttributeValueChange	O	
notifyObjectCreation	O	
notifyObjectDeletion	O	

6.3.6 Void

6.3.7 AntennaFunction

6.3.7.1 Definition

This optional IOC represents an array of radiating elements that may be tilted to adjust the RF coverage of a cell(s).

6.3.7.2 Attributes

Attributes of AntennaFunction

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
antennaFunctionId	+	M	M	-
userLabel	+	O	M	M
retUtranCellList	+	O	M	M
retTiltValue	+	O	M	M
bearing	+	O	M	M
maxTiltValue	+	O	M	M
minTiltValue	+	O	M	M
mechanicalOffset	+	O	M	M
retGroupName	+	O	M	M
height	+	O	M	M
baseElevation	+	O	M	O
latitude	+	O	M	O
longitude	+	O	M	O
maxAzimuthValue	+	O	M	M
minAzimuthValue	+	O	M	M
horizBeamwidth	+	O	M	M
vertBeamwidth	+	O	M	M
patternLabel	+	O	M	O

6.3.7.3 Notifications

Notifications of AntennaFunction

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])	

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
externalRncFunctionId	+	M	M	-
userLabel	+	M	M	M
mcc	+	M	M	M
mnc	+	M	M	M
rncId	+	M	M	M
controlledCellList	+	O	M	-

6.3.8.3 Notifications

Notifications of ExternalRncFunction

Name	Qualifier	Notes
notifyAttributeValueChange	O	
notifyObjectCreation	O	
notifyObjectDeletion	O	

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	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
id	+	M	M	-
userLabel	+	M	M	M
cId	+	M	M	M
localCellId	+	M	M	M
retAntennaFunctionList	+	O	M	M
maximumTransmissionPower	+	M	M	M
pichPower	+	O	M	O
pchPower	+	O	M	O
fachPower	+	O	M	O
cellMode	+	M	M	-
lac	+	M	M	M
rac	+	O	M	M
sac	+	M	M	M
uraList	+	O	M	M
utranGenericCell-IubLink	+	M	M	-
hsFlag	+	O	M	-
hsEnable	+	O	M	M
numOfHspdschs	+	O	M	M
numOfHsscchs	+	O	M	M
frameOffset	+	O	M	-
cellIndividualOffset	+	O	M	-
hcsPrio	+	O	M	-
maximumAllowedUlTxPower	+	O	M	-
snaInformation	+	O	M	-
qrxlevMin	+	O	M	-
deltaQrxlevmin	+	O	M	-
qhcs	+	O	M	-
penaltyTime	+	O	M	-
referenceTimeDifferenceToCell	+	O	M	-
readSFNIndicator	+	O	M	-
restrictionStateIndicator	+	O	M	-
dpcModeChangeSupportIndicator	+	O	M	-

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

6.3.9.3 Attribute constraints

The optional attributes `rac` and `uraList` shall be included if the PLMN contains a PS CN.

The optional attribute `hsFlag` shall only be supported over Itf-N, if the functionality it provides is not supported by vendor specific extension mechanisms.

The optional attributes `hsEnable`, `numOfHspdschs` and `numOfHsscchs` shall only be supported, if the functionality they provide is not supported by vendor specific extension mechanisms while the HSDPA feature is supported in the UTRAN cell.

6.3.9.4 Notifications

Notifications of `UtranGenericCell`

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	
`notifyStateChange`	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])	

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.

Inheriting from this IOC are the IOC ExternalUtranCellFDD and ExternalUtranCellTDD.

6.3.10.2 Attributes

Attributes of ExternalUtranGenericCell

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
id	+	M	M	-
userLabel	+	M	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	+	O	M	M
controllingRnc	+	O	M	-
hsFlag	+	O	M	-
frameOffset	+	O	M	-
cellIndividualOffset	+	O	M	-
hcsPrio	+	O	M	-
maximumAllowedUlTxPower	+	O	M	-
qrxlevMin	+	O	M	-
deltaQrxlevmin	+	O	M	-
qhcs	+	O	M	-
penaltyTime	+	O	M	-
referenceTimeDifferenceToCell	+	O	M	-
readSFNIndicator	+	O	M	-
restrictionStateIndicator	+	O	M	-
dpcModeChangeSupportIndicator	+	O	M	-
snaInformation	+	O	M	-

6.3.10.3 Attribute constraints

The optional attribute rac shall be included if the external cell is connected to a PS CN.

The optional attribute hsFlag shall only be supported over Itf-N, if the functionality it provides is not supported by vendor specific extension mechanisms.

6.3.10.4 Notifications

Notifications of ExternalUtranGenericCell

Name	Qualifier	Notes
notifyAttributeValueChange	O	
notifyObjectCreation	O	
notifyObjectDeletion	O	

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].

The IOC UtranCellFDD inherits from the abstract IOC UtranGenericCell.

6.3.11.2 Attributes

Attributes of UtranCellFDD

Attribute name	Visibility	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	+	O	M	-
cellCapabilityContainerFDD	+	O	M	-
txDiversityIndicator	+	O	M	-
temporaryOffset1	+	O	M	-
temporaryOffset2	+	O	M	-
sttdSupportIndicator	+	O	M	-
closedLoopMode1SupportIndicator	+	O	M	-

6.3.11.3 Attribute Constraints

The following optional attributes shall be supported over Itf-N, if they are not supported by vendor specific extension mechanisms: aichPower, pichPower, pchPower, fachPower.

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].

The IOC UtranCellTDD inherits from the abstract IOC UtranGenericCell

6.3.12.2 Attributes

Attributes of UtranCellTDD

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
Uarfcn	+	O	M	M
cellParameterId	+	O	M	M
primaryCcpchPower	+	O	M	M
timeSlotList	+	O	M	M
cellCapabilityContainerTDD	+	O	M	-
sctdIndicator	+	O	M	-
dpchConstantValue	+	O	M	-

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].

The IOC UtranCellTDDLcr inherits from the abstract IOC UtranCellTDD

6.3.13.2 Attributes

Attributes of UtranCellTDDLcr

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
fpachPower	+	O	M	O
dwPchPower	+	O	M	M
tstdIndicator	+	O	M	-
timeSlotLCR	+	O	M	-

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].

The IOC UtranCellTDDHcr inherits from the abstract IOC UtranCellTDD

6.3.14.2 Attributes

Attributes of UtranCellTDDHcr

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
schPower	+	O	M	M
burstType	+	O	M	-
temporaryOffset1	+	O	M	-
syncCase	+	O	M	-
timeSlotForSch	+	O	M	-
schTimeSlot	+	O	M	-

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].

The IOC ExternalUtranCellFDD inherits from the abstract IOC ExternalUtranCell

6.3.15.2 Attributes

Attributes of ExternalUtranCellFDD

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

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].

The IOC ExternalUtranCellTDD inherits from the abstract IOC ExternalUtranGenericCell.

6.3.16.2 Attributes

Attributes of ExternalUtranCellTDD

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
uarfcn	+	O	M	M
cellParameterId	+	O	M	M
primaryCcpchPower	*	O	O	O
timeSlotList	+	O	M	-
cellCapabilityContainerTDD	+	O	M	-
sctdIndicator	+	O	M	-
dpchConstantValue	+	O	M	-

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].

The IOC ExternalUtranCellTDDLcr inherits from the abstract IOC ExternalUtranCellTDD.

6.3.17.2 Attributes

Attributes of ExternalUtranCellTDDHcr

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
burstType	+	O	M	-
temporaryOffset1	+	O	M	-
syncCase	+	O	M	-
timeSlotForSch	+	O	M	-
schTimeSlot	+	O	M	-

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].

The IOC ExternalUtranCellTDDHcr inherits from the abstract IOC ExternalUtranCellTDD.

6.3.18.2 Attributes

Attributes of ExternalUtranCellTDDLcr

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
tstdIndicator	+	O	M	-
timeSlotLCR	+	O	M	-

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 NodeBFunctionDN.
nodeBFunction-IubLink	This role (when present) represents NodeBFunctioncapability 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 NodeBFunctionmust 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-UtranGenericCell`	This role (when present) represents the `IubLink` capability to identify the set of related child classes of `UtranGenericCell`. `IubLink.iubLink-UtranGenericCell` 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 one related IubLink. When the role is absent, the ATMChannelTerminationPoint -IubLinkshall contain no information. When it is present, it shall contain one IubLink DN.

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 AssociatedWith2 (O)

6.4.6.1 Definition

This represents a bi-directional relation between a UtranGenericCell and an AntennaFunction. 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

6.4.6.2 Roles

Roles of the relation AssociatedWith2

Name	Definition
retAntennaFunctionList	This role (when present) allows navigation from a UtranGenericCell to the AntennaFunction(s) which are supporting the UtranGenericCell.
retUtranCellList	This role (when present) allows navigation from an AntennaFunction to the UtranGenericCell(s) it is supporting.

6.4.6.3 Constraints

Name	Definition
inv_antennaInstance	The referential attributes retAntennaFunctionList, and retUtranCellList are to be populated when instances of the IOC AntennaFunction are instantiated.

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`.

6.5 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 aich channel in an FDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-22..+5 dB) Steps of 1dB
`antennaFunctionId`	An attribute whose "name+value" can be used as an RDN (according to the rules in TS 32.300 [13]) when naming an instance of the object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
`baseElevation`	The elevation in meters above sea level at the base of the antenna structure. This value, when subtracted from `height`, provides the height of the antenna above the ground.	An integral value representing a number of meters in 0.1 meter increments.
`bchPower`	The power of the broadcast channel in the FDD mode cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
`bearing`	The bearing in degrees that the antenna is pointing in. Note that bearing is the “true” heading (the compass heading offset by a true north variation).	A single integral value corresponding to an angle in degrees between 0 and 360.
`burstType`	Use for Timeslot ISCP measurements only. Default value is "Type1" (3.84 Mcps TDD only)	ENUMERATED
`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.	REAL(-10..10 by step of 0.5
cellMode	An attribute that identifies the cell mode.	Type: Enumerated value Range: (“FDD mode”, “1.28McpsTDD mode”, “3.84 (7.68)McpsTDD mode”)
cellParameterId	For IOCs UtranGenericCell and ExternalUtranGenericCell,this attribute identifies unambiguously the TDD mode cell (Ref. TS 25.433 [5]): • 3.84 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.	Type: Integral numeric value Range: (0..127)
cId	The attribute is the identifier of a cell in one RNC (Ref. 3GPP TS 25.401 [4], 3GPP TS 25.433 [5]).	Type: Integral numeric value Range: (0..65535)
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
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	INTEGER(-4..-2 by step of 2
dpchConstantValue	DPCH Constant Value is the power margin in dB used by a UE to set the proper uplink power.	INTEGER(-10…10)
dwPchPower	DwPCH Power is the power that shall be used for transmitting the DwPCH in a 1.28 Mcps TDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-15..+40 dBm) Steps of 0.1dB
externalRncFunctionId	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.	
externalUtranCellId	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.	
fachPower	The power of the fach transport channel in the cell (Ref 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35.. +15 dB) Steps of 0.1dB
fpachPower	The Power of the fpach channel in TDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-15.. +40 dBm) Steps of 0.1dB
frameOffset	Neighbouring cells monitoring (synchro), 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 3GPP TS25.331 (TS 25.304) 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.	INTEGER (0..7)

height	The height of an antenna above sea level. Planning permission (for a cell site) is normally granted on the antenna height. This parameter also determines the site coverage and feeds into the planning tool.	An integral value representing a number of metres in 0.1 meter increments.
horizBeamwidth	The 3 dB power beamwidth of the antenna pattern in the horizontal plane. A value of 360 indicates an omni-directional antenna.	A single integral value corresponding to an angle in degrees between 0 and 360.
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.	
iubLinkId	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.	
lac	IOCs UtranGenericCell and ExternalUtranGenericCell: Location Area Code, LAC (Ref. 3GPP TS 23.003 [3]).	Type: Integral numeric value Range: (1..65533, 65535)
latitude	The latitude of the antenna location based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to the northern hemisphere.	Valid values described in 3GPP TS23.032 [20].
localCellId	Local Cell id is used to uniquely identify the set of resources defined in a Node B to support a cell (as defined by a Cid Ref. 3GPP TS 25.401 [4], 3GPP TS 25.433 [5]). It must be unique in Node B at a minimum, but may be unique in UTRAN. It can be used to tie the cell in the RNC to a specific set of resources in the Node B.	Type: Integral numeric value Range: (0..268435455)
longitude	The longitude of the antenna location based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to degrees east of 0 degrees longitude.	Valid values described in 3GPP TS23.032.[20]
maximumAllowedUlTxPower	Cell (re)selection, defined in 3GPP TS25.331 This information element indicates the maximum allowed uplink transmit power.	Type: Numeric value Unit: dBm
maxAzimuthValue	The maximum amount of change of azimuth the RET system can support. This is the change in degrees clockwise from bearing.	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see Note.
maxTiltValue	The maximum amount of tilt the RET system can support. This helps in preventing the user from entering any unrealistic value for retTiltValue and hence prevents the motors on the RET unit from getting jammed / burnt out.	A single integral value corresponding to an angle in degrees between 0 and 360. In 0.1 degree increments (see TR.25.802 [19] clause 7.7.5.11 RET.
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. (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (0..50 dBm) Steps of 0.1 dB
mcc	Mobile Country Code, MCC (part of the PLMN Id, Ref. 3GPP TS 23.003 [3]).	
mechanicalOffset	This is a value representing a non-adjustable tilt value, which is imparted to the antenna due to the physical installation. The actual tilt at any point in time is the summation of mechanicalOffset and retTiltValue .	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see Note.
minAzimuthValue	The minimum amount of change of azimuth the RET system can support. This is the change in degrees counter-clockwise from bearing.	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see Note.
minTiltValue	The minimum amount of tilt the RET system can support. This helps in preventing the user from entering any unrealistic value for retTiltValue and hence prevents the motors on the RET unit from getting jammed / burnt out.	A single integral value corresponding to an angle in degrees between 0 and 360 with a resolution of 0.1 degrees, see Note (see also 3GPP TR.25.802 [19] clause 7.7.5.11 RET Note 1).
mnc	Mobile Network Code, MNC (part of the PLMN Id, Ref. 3GPP TS 23.003 [3]).	

pchPower	The power of pch transport channel in the cell (Ref 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35.. +15 dB) Steps of 0.1dB
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.	INTEGER(0, 10, 20, 30 ,40, 50, 60); Default is 0.
pichPower	The Power of the pich channel in the cell (Ref 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-10..+5 dB) Steps of 1dB
primaryCcpchPower	IOCs UtranGenericCell and ExternalUtranGenericCell: The power of the primary CCPCH channel in the TDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-15..+40 dBm) Steps of 0.1dB
nodeBFunctionId	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.	
patternLabel	The pattern name is a textual, alpha-numeric string to allow identification of the antenna pattern along with the antenna vendor information such as model number, etc.	
primaryCpichPower	IOCs UtranCell and ExternalUtranCell: The power of the primary CPICH channel in the FDD mode cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-10..50 dBm) Steps of 0.1 dB
primarySchPower	The power of the primary synchronisation channel in the FDD mode cell, DL Power (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
primaryScramblingCode	IOCs UtranCell and ExternalUtranCell: The primary DL scrambling code used by the FDD mode cell (Ref. 3GPP TS 25.433 [5]).	Type: Integral numeric value Range: (0..511)
Qhcs	Cell (re)selection for HCS, defined in 3GPP TS25.331 (TS 25.304) This specifies the quality threshold levels for applying prioritised hierarchical cell re-selection	INTEGER(0..99)
qqualMin	Cell (re)selection, defined in 3GPP TS25.331 (TS25.304) This specifies the minimum required quality level in the cell in dB. It is only applicable for FDD cells.	INTEGER(-24..0)
qrxlevMin	Cell (re)selection, defined in 3GPP TS25.331 (TS25.304) This specifies the minimum required RX level in the cell in dBm.	INTEGER(-115..-25 by step of 2)
rac	Routing Area Code, RAC (Ref. 3GPP TS 23.003 [3]).	Type: Integral numeric value Range: (0..255)
readSFNIndicator	Neighbouring cells monitoring (synchro), defined in 3GPP TS25.331 TRUE indicates that read of SFN is requested for the target cell	BOOLEAN
referenceTimeDifferenceToCell	Neighbouring cells monitoring (synchro), defined in 3GPP TS25.331 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.	INTEGER
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
retAntennaFunctionList	This is a referential attribute to list the DNs of AntennaFunction(s) that support the UtranGenericCell.	A list of DNs as defined in TS 32.300 [13].

retGroupName	The group name is a textual, alpha-numeric string to define a logical grouping of antennas which may be in different cells. This attribute permits the definition of a logical grouping of the antennas. This may be defined either at installation time, or by management activity to provisioning the group name via the Itf-N.	Type: string bounded to 80 characters.
retTiltValue	Gives you the tilt value of the antenna that has been made using electrical means (i.e. using RET). This attribute gives the operator an indication of the current setting of the antenna and is at the centre of the RET feature.	A single integral value corresponding to an angle in degrees between 0 and 360in 0.1 degree increments (see Note).
retUtranCellList	This is a list of UtranGenericCell DNs to record the relationship between the AntennaFunction instance and the UtranGenericCell(s) which are supported by the antenna.	A list of DNs as defined in TS 32.300 [13].
rncFunctionId	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.	
rncId	IOC ExternalUtranGenericCell: Unique RNC ID for the associated RNC (Ref. 3GPP TS 23.003 [3]). IOC RncFunction: Unique RNC ID (Ref. 3GPP TS 23.003 [3]).	
sac	Service Area Code, SAC (Ref. 3GPP TS 23.003 [3]).	Type: Integral numeric value Range: (0.. 65535)
schPower	The power of the synchronisation channel in 3.84 Mcps TDD cell (Ref. 3GPP TS 25.433 [5]).	Type: Numeric Value Range: (-35..+15 dB) Steps of 0.1dB
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. The SCH Time Slot IE is only applicable if the value of Sync Case IE is Case 2 since in this case the SCH is allocated in TS#k and TS#k+8.	INTEGER(0…6)
sctdIndicator	This attribute indicates whether SCTD is used.	BOOLEAN TRUE indicates that SCTD is used
secondarySchPower	The power of the secondary synchronisation channel in the FDD mode cell, DL Power (Ref. 3GPP TS 25.433 [5]).	Type: Numeric value Range: (-35..+15 dB) Steps of 0.1dB
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 There is no Sync Case indication needed for 1.28Mcps TDD.	INTEGER
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	INTEGER(3, 6, 9, 12, 15, 18, 21, inf)

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.	INTEGER(2, 3, 4, 6, 8, 12, inf)
timeSlotForSch	The Time Slot represents the time interval assigned to a Physical Channel referred to the start of a Radio Frame.	INTEGER(0…14)
timeSlotLCR	The Time Slot LCR is the number of the traffic time slot within a 5 ms subframe of LCR TDD (Dl only).	INTEGER(0…6)
timeSlotList	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) or 15 (for 3.84 Mcps TDD cell) items. Within each item there are three parts: timeSlotId, timeSlotDirection, timeSlotStatus (Ref. 3GPP TS 25.433 [5]).	timeSlotId: when applied to 1.28 Mcps TDD cell: Type: Integral numeric value Range: (0..6); when applied to 3.84 (7.68) Mcps TDD cell: Type: Integral numeric value Range: (0..14); timeSlotDirection: Type: Enumerated value Range: (Ul, Dl); timeSlotStatus: Type: Enumerated value Range: (Active, Not active)
txDiversityIndicator	Defined in 3GPP TS25.331 (25.423) The txDiversityIndicator 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	BOOLEAN
tstdIndicator	This attribute indicates whether TSTD is used (1.28 Mcps TDD only).	BOOLEAN default value is TRUE
uarfcn	IOCs UtranGenericCell and ExternalUtranGenericCell: The UTRA absolute Radio Frequency Channel number for TDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]).	Type : Integral numeric Value Range: (0..16383)
uarfcnDl	IOCs UtranGenericCell and ExternalUtranGenericCell: The DL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]).	Type: Integral numeric value Range: (0..16383)
uarfcnUl	IOCs UtranGenericCell and ExternalUtranGenericCell: The UL UTRA absolute Radio Frequency Channel number for FDD mode cell, UARFCN (Ref. 3GPP TS 25.433 [5]).	Type: Integral numeric value Range: (0..16383)
uraList	A list of UTRAN Registration Area, URA (Ref. 3GPP TS 25.331 (subclause 10.3.10)[9]), that an UtranCell can belong to.	Type: A list of Integral numeric values Range: (0..65535) for each integral numeric value.
userLabel	A user-friendly (and user assigned) name of the associated object. Inherited from ManagedFunction.	

utranRelationId	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.	
vertBeamwidth	The 3 dB power beamwidth of the antenna pattern in the vertical plane.	A single integral value corresponding to an angle in degrees between 0 and 180.
NOTE: If an antenna vendor can only support a granularity of tilt value in 5 degree increments, it means that the value of tilt over the Itf-N would be 0, 50, 100, 150 etc, corresponding to an integral number of 0.1 degree values.		

6.5.2 Constraints

None.

6.6 Particular information configurations

Not applicable.

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 `UtranCell`'s and the `AntennaFunction` class, permitting the model to support all possibilities. The figure B.1 below illustrates the RET architecture.

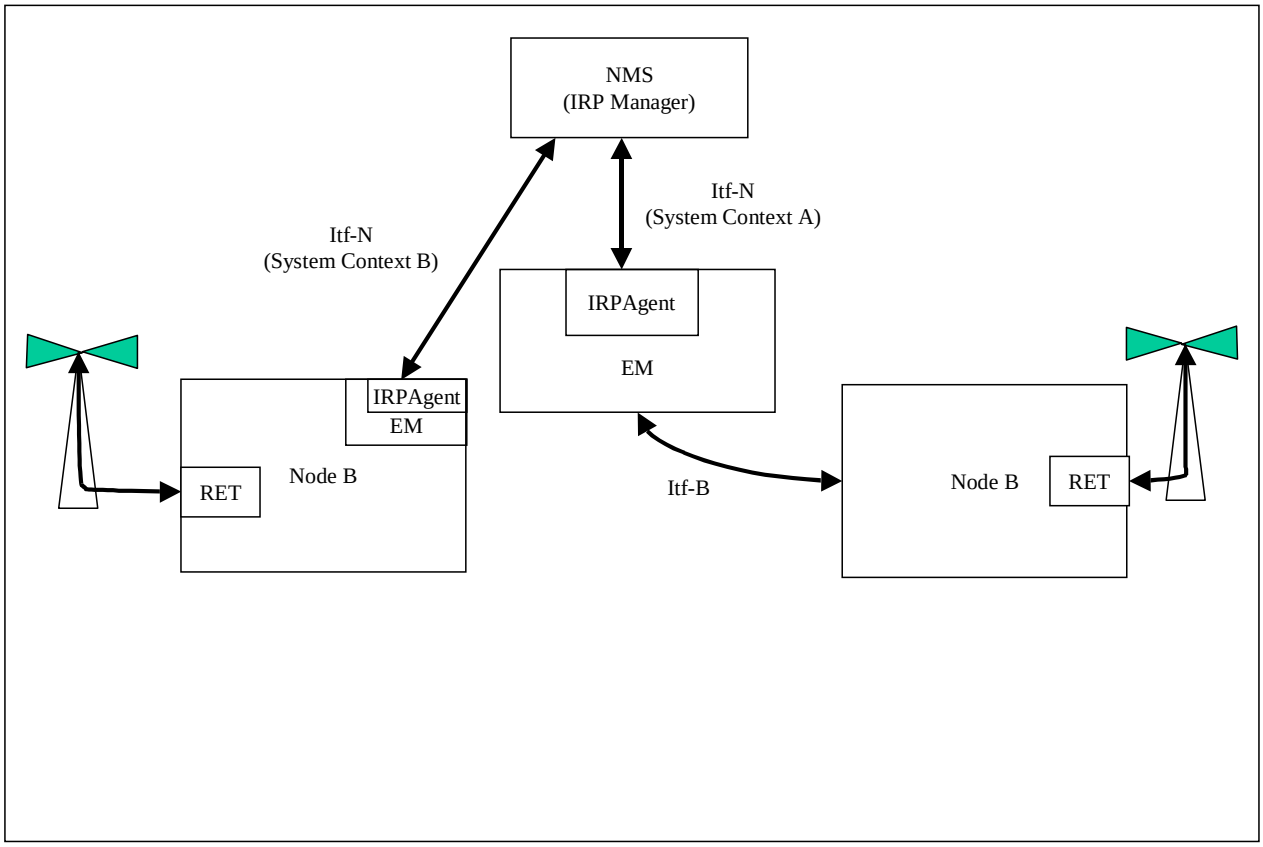


Figure B.1: Overall RET architecture

Annex C (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Cat**	**Old**	**New**
Jun 2001	SA_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	--	2.0.0	4.0.0
Jun 2002	SA_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	SA_16	SP-020304	0002	--	Correction of supported IRP in system context	F	4.0.0	4.1.0
Sep 2002	SA_17	SP-020490	0003	--	UML corrections	F	4.1.0	4.2.0
Sep 2002	SA_17	SP-020492	0004	--	Add the new IRP IS methodology defined in 32.102	F	4.2.0	5.0.0
Sep 2002	SA_17	SP-020492	0005	--	Add State Management	B	4.2.0	5.0.0
Dec 2002	SA_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	SA_20	SP-030282	0008	--	Include notification tables	A	5.1.1	5.2.0
Jun 2003	SA_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	SA_20	SP-030283	0012	--	Deletion of UTRAN attribute relationType	A	5.1.1	5.2.0
Dec 2003	SA_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	SA_22	SP-030646	0016	--	Correction of the number of possible URAs from 1 to 8	A	5.2.0	5.3.0
Dec 2003	SA_22	SP-030641	0017	--	Add missing notification notifyPotentialFaultyAlarmlist	F	5.2.0	5.3.0
Dec 2003	SA_22	SP-030643	0018	--	Remove redundant VsDataContainer Containment UML - Now covered by 32.622	F	5.2.0	5.3.0
Mar 2004	SA_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	SA_24	SP-040254	0021	--	Correction of the supported UMTS frequencies	A	6.0.0	6.1.0
Sep 2004	SA_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	SA_25	SP-040595	0023	--	Include ATM in CM UTRAN network resources IRP NRM	B	6.1.0	6.2.0
Sep 2004	SA_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	SA_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	SA_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	SA_26	SP-040810	0029	--	Add support for the state change notification	B	6.2.0	6.3.0
Mar 2005	SA_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	SA_27	SP-050048	0033	--	Add missing definition of IOC ExternalRncFunction	F	6.3.0	6.4.0
Mar 2005	SA_27	SP-050048	0034	--	Amendments to UTRAN NRM for RET	F	6.3.0	6.4.0
Sep 2005	SA_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	SA_31	SP-060102	0036	--	Correct relationships for external Information Object Classes (IOCs)	F	6.5.0	6.6.0
Jun 2006	SA_32	SP-060415	0037	1	Correct the definition of longitude	F	6.6.0	6.7.0
Jun 2006	SA_32	SP-060259	0038	--	Add configuration parameters for radio channel power	B	6.6.0	7.0.0
Mar 2007	SA_35	SP-070046	0020a	--	Revise the Object Model in UTRAN network resources IRP Network Resource Model	B	7.0.0	7.1.0

History

Document history		
V7.1.0	March 2007	Publication