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*Technical Specification*

**Digital cellular telecommunications system (Phase 2+);  
Telecommunication management;  
Configuration Management (CM);  
GERAN network resources Integration Reference Point (IRP):  
Network Resource Model (NRM)  
(3GPP TS 32.652 version 5.0.0 Release 5)**

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## Foreword

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## Introduction

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G network as it evolves. CM actions have the objective to control and monitor the actual configuration on the 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.

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# 1 Scope

The present document is part of an Integration Reference Point (IRP) named "GERAN 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 GERAN resources. The "GERAN 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 GERAN Network Resources IRP: Network Resource Model. It reuses relevant parts of the generic NRM in [16], either by direct reuse or sub-classing, and in addition to that defines GERAN specific Managed 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.

To summarize, the present document has following main purpose: to define the applied GERAN specific Network Resource Model, based on the generic NRM in [16].

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

Finally, regarding the support of the State Management IRP: IS [19], all NRM"s of one release shall support the same State Management IRP version. This NRM specification is related to 3G TS 32.672 V5.0.X. [9]

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# 2 References

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

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

- [1] 3GPP TS 32.101: "3G Telecom Management principles and high level requirements".
- [2] 3GPP TS 32.102: "3G Telecom Management architecture".
- [3] 3GPP TS 24.008: "Core Network Protocols – Stage 3".
- [4] 3GPP TS 44.018: "Radio Resource Control Protocol".
- [5] 3GPP TS 45.008: "Radio subsystem link control".
- [6] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".
- [7] ITU-T Recommendation X.710 (1991): "Common Management Information Service Definition for CCITT Applications".
- [8] 3GPP TS 23.003: "Numbering, addressing and identification".
- [9] 3GPP TS 32.672: "Configuration Management (CM); State Management Integration Reference Point (IRP): Information service".

- [10] Void.
- [11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP); Information service".
- [12] Void
- [13] 3GPP TS 32.300: "Configuration Management (CM); Name convention for Managed Objects".
- [14] 3GPP TS 32.600: "Configuration Management (CM); Concept and main requirements".
- [15] Void.
- [16] 3GPP TS 32.622: "Configuration Management (CM); Generic network resources Integration Reference Point (IRP); Network Resource Model (NRM)".
- [17] 3GPP TS 32.602: "Configuration Management (CM); Basic CM Integration Reference Point (IRP) information model".
- [18] 3GPP TS 32.612: "Configuration Management (CM); Bulk CM Integration Reference Point (IRP); Information service".

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## 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].

**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).

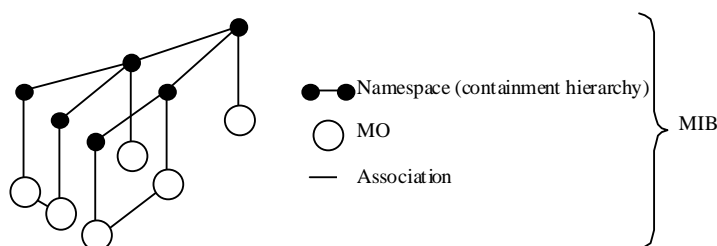
**Managed Element (ME):** An instance of the IOC ManagedElement, defined in [16].

**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 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 Base (MIB):** A MIB is an instance of an NRM and has some values on the defined attributes and associations specific for that instance. In the context of the present document, an MIB consists of:

- (1) a Name space (describing the MO containment hierarchy in the MIB through Distinguished Names),
- (2) a number of IOCs with their attributes and
- (3) a number of Associations between these IOCs. Also note that TMN (ITU-T Recommendation X.710 [7]) defines a concept of a Management Information Tree (also known as a Naming Tree) that corresponds to the

name space (containment hierarchy) portion of this MIB definition. Figure 3.1 depicts the relationships between a Name space and a number of participating MOs (the shown association is of a non-containment type).



**Figure 3.1: Relationships between a Name space and a number of participating MOs**

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

**Name space:** A name space is a collection of names. The IRP name convention (see 3GPP TS 32.300 [13]) restricts the name space to a hierarchical containment structure, including its simplest form - the one-level, flat name space.

All Managed Objects in a MIB shall be included in the corresponding name space and the MIB/name space shall only support a strict hierarchical containment structure (with one root object). A Managed Object that contains another is said to be the superior (parent); the contained Managed Object is referred to as the subordinate (child). The parent of all MOs in a single name space is called a Local Root. The ultimate parent of all MOs of all managed systems is called the Global Root.

**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
CMIP	Common Management Information Protocol
CN	Core Network
CORBA	Common Object Request Broker Architecture
DN	Distinguished Name (see 3GPP TS 32.300 [13])
EM	Element Manager
FM	Fault Management
GERAN	GSM-EDGE Radio Access Network
GPRS	General Packet Radio System
IOC	Information Object Class
IRP	Integration Reference Point
ITU-T	International Telecommunication Union, Telecommunication Sector
Iub	Interface between RNC and Node B
ME	Managed Element
MIB	Management Information Base
MIM	Management Information Model
MO	Managed Object
NE	Network Element
NM	Network Manager
NR	Network Resource
NRM	Network Resource Model
PM	Performance Management
RDN	Relative Distinguished Name (see 3GPP TS 32.300 [13])
RNC	Radio Network Controller
SS	Solution Set
TMN	Telecommunications Management Network
UML	Unified Modelling Language



UMTS	Universal Mobile Telecommunications System
UTRAN	UMTS Terrestrial Radio Access Network
XML	eXtensible Mark-up Language

# 4 System overview

## 4.1 System context

Figure 4.1 and 4.2 identify system contexts of the IRP defined by the present document in terms of its implementation called IRPAgent and the user of the IRPAgent, called IRPManager. For a definition of IRPManager and IRPAgent, see 3GPP TS 32.102 [2].

The IRPAgent implements and supports this IRP. The IRPAgent can reside in an Element Manager (EM; for definition see 3GPP TS 32.101 [1]) or a Network Element (NE) (see also [2] clause 8). In the former case, the interfaces (represented by a thick dotted line) between the EM and the NEs is not the subject of this IRP.

Figure 4.1 and 4.2 identify system contexts of the subject IRP in terms of its implementation called IRPAgent and the user of the IRPAgent, called IRPManager. For a definition of IRPManager and IRPAgent, see 3GPP TS 32.102 [2].

The IRPAgent implements and supports the Basic CM IRP. The IRPAgent can be an Element Manager (EM) or a mediator that interfaces one or more NEs (see Figure 4.1), or it can be a Network Element (NE) (see Figure 4.2). In the former case, the interfaces (represented by a thick dotted line) between the EM and the NEs are not subject of this IRP.

An IRPManager using this IRP shall choose one of the two System Contexts defined here, for each NE. For instance, if an EM is responsible for managing a number of NEs, the NM shall access this IRP through the EM and not directly to those NEs. For another IRP though, the System Context may be different.

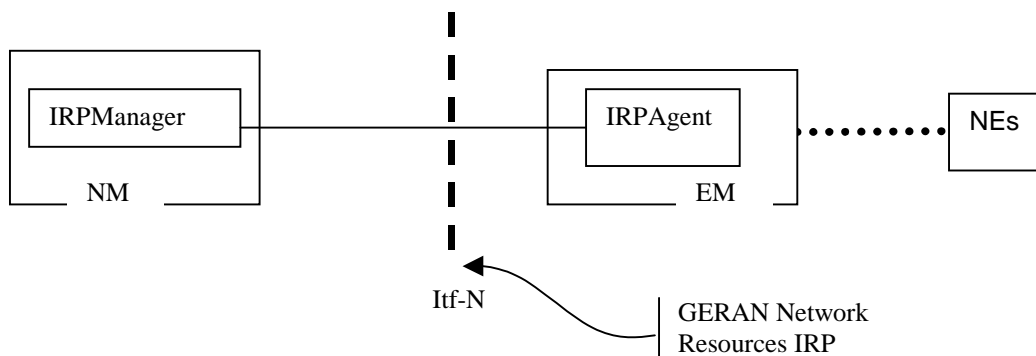


Figure 4.1: System Context A

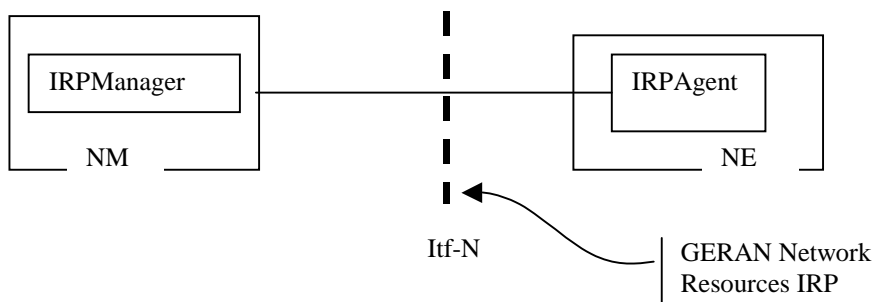


Figure 4.2: System Context B

## 4.2 Compliance rules

For general definitions of compliance rules related to qualifiers (Mandatory/Optional/Conditional) for *operations, notifications and parameters* (of operations and notifications) please refer to 3GPP TS 32.102 [2].

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 SAS-compliant IRPManager with respect to all Mandatory and Optional information object classes, attributes, associations, operations, parameters and notifications 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 in Release 4/5 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.

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## 5 Modelling approach

The modelling approach adopted and used in this IRP is described in clause 5 of Generic Network Resources IRP: NRM [16].

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## 6 IRP Information Model

### 6.1 Information entities imported and local labels

None.

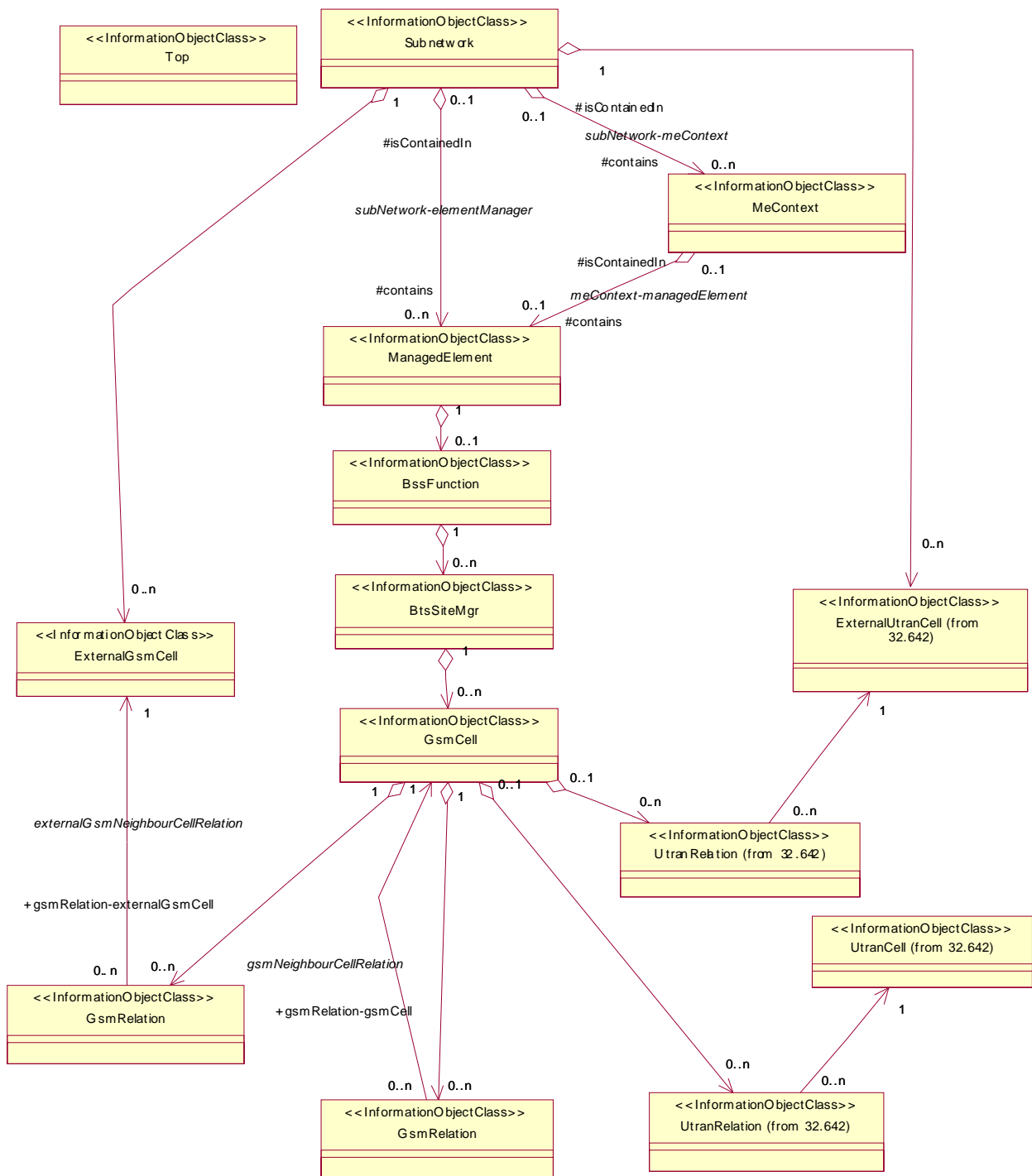
### 6.2 Class diagram

#### 6.2.1 Attributes and relationships

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

Figure 6.2.1-1 show the containment/naming hierarchy and the associations of the GERAN NRM.

NOTE: The name-containment relations between IOCs are in the diagram(s) below indicated by UML "Aggregation by reference" ("hollow diamonds").

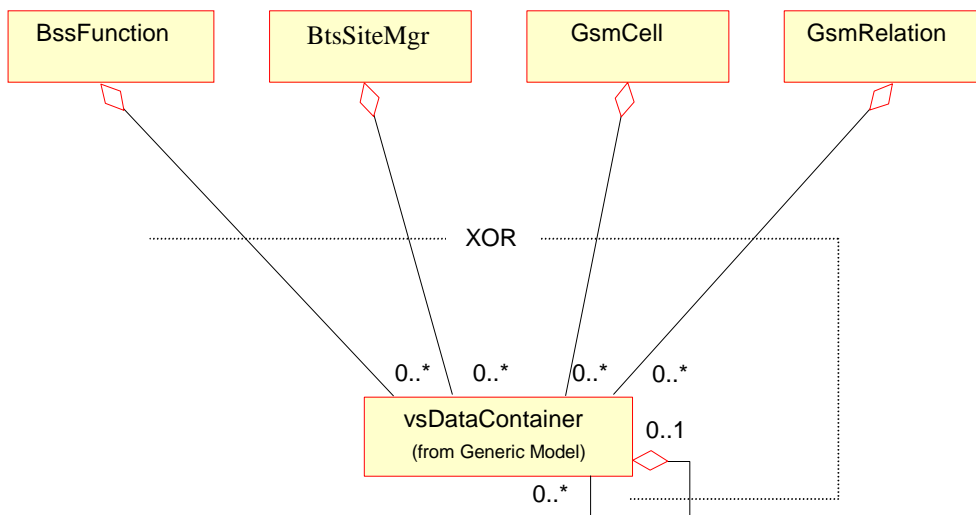


- NOTE 1: ManagedElement may be contained in either a SubNetwork or an MeContext instance, or have no parent instance at all. See also [16].
- NOTE 2: The listed cardinality numbers represent transient as well as steady-state numbers, and reflect all managed object creation and deletion scenarios.
- NOTE 3: The relation between UtranRelation and UranCell is optional. It may be present if both the UtranCell and the GsmCell are managed by the same management node.
- NOTE 4: The GeranRelation and UtranRelation can be contained under IOCs defined in other NRMs.

Figure 6.2.1-1: GERAN NRM Containment/Naming and Association diagram

Each Managed Object 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, BssFunction=BSS1.



- 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 MOC. The vsDataContainer can be contained under MOCs defined in other NRMs.

**Figure 6.2.1-2: GERAN NRM Containment/Naming and Association diagram**

The vsDataContainer is only used for the Bulk CM IRP.

## 6.2.2 Inheritance

This sub-clause depicts the inheritance relationships that exists between IOCs.

Figure 6.2.2 shows the inheritance hierarchy for the GERAN NRM.

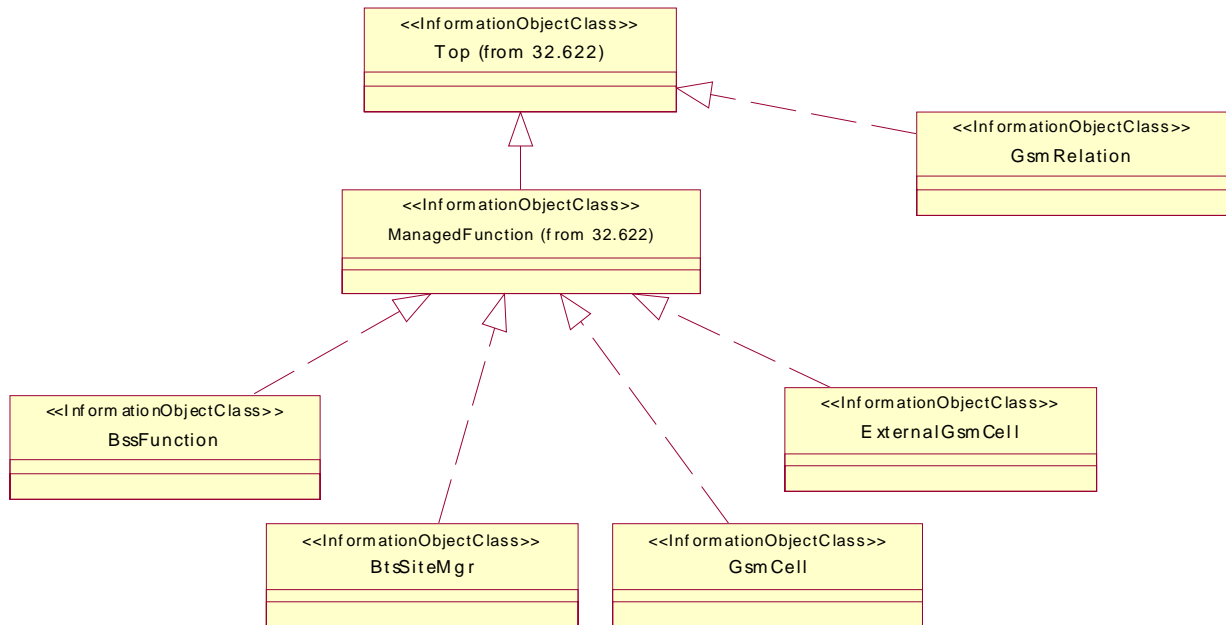


Figure 6.2.2: GERAN NRM Inheritance Hierarchy

## 6.3 Information object classes definition

### 6.3.1 BssFunction

#### 6.3.1.1 Definition

This IOC represents BSS functionality. For more information about the BSS, see GSM 03.02 [16].

#### 6.3.1.2 Attributes

Table 1: Attributes of BssFunction

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
bssFunctionId	+	M	M	-
userLabel	+	M	M	M

### 6.3.2 BtsSiteMgr

#### 6.3.2.1 Definition

The 'BtsSiteMgr' IOC contains site specific information for a BTS site.

### 6.3.2.2 Attributes

**Table 2: Attributes of BtsSiteMgr**

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
btsSiteMgrId	+	M	M	-
userLabel	+	M	M	M
latitude	+	O	M	M
longitude	+	O	M	M

**Table 2a: Additional attributes of BtsSiteMgr for the support of the State Management IRP**

Attribute Name	Support Qualifier	READ	WRITE
operationalState	O	M	—

NOTE: No state propagation shall be implied.

### 6.3.3 GsmCell

#### 6.3.3.1 Definition

This IOC represents the GSM radio cell. The applicability of instantiation of this class is depending on the ME type. It may only be instantiated under ME of type BSC.

#### 6.3.3.2 Attributes

**Table 3: Attributes of GsmCell**

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
gsmCellId	+	M	M	-
userLabel	+	M	M	M
cellIdentity	+	M	M	M
cellAllocation	+	M	M	M
ncc	+	M	M	M
bcc	+	M	M	M
lac	+	M	M	M
mcc	+	M	M	M
mnc	+	M	M	M
rac	+	O	M	M
racc	+	O	M	M
tsc	+	M	M	M
rxLevAccessMin	+	M	M	M
msTxPwrMaxCCH	+	M	M	M
hoppingSequenceNumber	+	M	M	M
plmnPermitted	+	M	M	M

#### 6.3.3.3 Attribute constraints

The optionally attributes rac and racc shall be included if the cell is a GPRS cell. Otherwise they shall not be included.

### 6.3.4 GsmRelation

#### 6.3.4.1 Definition

The 'GsmRelation' IOC contains radio network related parameters for the relation to the 'GsmCell' or 'ExternalGsmCell' managed object. Note: In handover relation terms, the cell containing the GSM Relation object is the source cell for the handover. The cell referred to in the GSM 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.

### 6.3.4.2 Attributes

**Table 4: Attributes of GsmRelation**

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
gsmRelationId	+	M	M	-
relationType	+	M	M	M
adjacentCell	+	M	M	M
bcchFrequency	+	O	M	-
ncc	+	O	M	-
bcc	+	O	M	-
lac	+	O	M	-

### 6.3.4.3 Attribute constraints

The optionally attributes bcchFrequency, ncc, bcc and lac shall be included if the EM does not guarantee consistency between the cell definition and what is broadcasted on system information. Otherwise they shall not be included.

## 6.3.5 ExternalGsmCell

### 6.3.5.1 Definition

This IOC represents a radio cell controlled by another IRPAgent. This IOC has necessary attributes for inter-system handover. It contains a subset of the attributes of related IOCs controlled by another IRPAgent. To maintain the consistency between the attribute values of these two IOCs is outside the scope of this document.

### 6.3.5.2 Attributes

**Table 5: Attributes of ExternalGsmCell**

Attribute name	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
externalGsmCellId	+	M	M	-
userLabel	+	M	M	M
cellIdentity	+	M	M	M
bcchFrequency	+	M	M	M
ncc	+	M	M	M
bcc	+	M	M	M
lac	+	M	M	M
mcc	+	M	M	M
mnc	+	M	M	M
rac	+	O	M	M
racc	+	O	M	M

### 6.3.5.3 Attribute constraints

The optionally attributes rac and racc shall be included if the cell is a GPRS cell. Otherwise they shall not be included.

## 6.4 Information relationships definition

### 6.4.1 ExternalGsmNeighbourCellRelation (M)

#### 6.4.1.1 Definition

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



### 6.4.1.2 Roles

**Table 6: Roles of the relation ExternalGsmNeighbourCellRelation**

Name	Definition
gsmRelation-externalGsmNeighbourCell	This role (when present) represents GsmRelation capability to identify one ExternalGsmCell. When this role is present, the GsmRelation.adjacentCell shall contain one ExternalGsmNeighbourCell DN.

### 6.4.1.3 Constraints

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

## 6.4.2 GsmNeighbourCellRelation (M)

### 6.4.2.1 Definition

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

### 6.4.2.2 Roles

**Table 7: Roles of the relation GsmNeighbourCellRelation**

Name	Definition
gsmRelation-gsmNeighbourCell	This role (when present) represents GsmRelation capability to identify one GsmCell. When this role is present, the GsmRelation.adjacentCell shall contain one GsmCell DN.

### 6.4.2.3 Constraints

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

## 6.5 Information attributes definition

### 6.5.1 Definition and legal values

The table below defines the attributes that are present in several information object classes of this TS.

Table 6: Attributes

Attribute Name	Definition	Legal Values
adjacentCell	Pointer to GSM cell or external GSM cell. Distinguished Name of the corresponding object.	
bcc	<b>IOCs <u>GsmCell</u> and <u>ExternalGsmCell</u>:</b> Base station colour code, BCC (part of BSIC). Ref 3GPP TS 44.018 [4]. <b>IOC <u>GsmRelation</u>:</b> Base station colour code, BCC (part of BSIC. Ref 3GPP TS 44.018 [4]) for another GSM cell or the external GSM cell, that is broadcast in System Information in the Cell.	
bcchFrequency	<b>IOC <u>ExternalGsmCell</u>:</b> This attribute contains the absolute radio frequency channel number of the BCCH channel of the GSM cell. <b>IOC <u>GsmRelation</u>:</b> This attribute contains the absolute radio frequency channel number of the BCCH channel of another GSM cell or the external GSM cell, that is broadcast in System Information in the Cell.	
bssFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of this object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
btsSiteMgrid	An attribute whose 'name+value' can be used as an RDN when naming an instance of this object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
cellAllocation	This attribute defines the set of radio frequencies allocated and available to a cell, the first element sets the BCCH frequency, Ref 3GPP TS 44.018 [4].	
cellIdentity	Cell Identity (Ref 3GPP TS 24.008 [3]).	
externalGsmCellId	An attribute whose 'name+value' can be used as an RDN when naming an instance of this object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
gsmCellId	An attribute whose 'name+value' can be used as an RDN when naming an instance of this object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
gsmRelationId	An attribute whose 'name+value' can be used as an RDN when naming an instance of this object class. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
hoppingSequenceNumber	HoppingSequenceNumber. Attribute description reference 3GPP TS 45.002 [6] (HSN)	
lac	<b>IOCs <u>GsmCell</u> and <u>ExternalGsmCell</u>:</b> Location Area Code, LAC . Ref 3GPP TS 24.008 [3]. <b>IOC <u>GsmRelation</u>:</b> Location Area Code, LAC (Ref 3GPP TS 24.008 [3]) for another GSM cell or the external GSM cell, that is broadcast in System Information in the Cell.	
latitude	Used for geographical positioning of the sitemanager	
longitude	Used for geographical positioning of the sitemanager	
mcc	Mobile Country Code, MCC (part of the PLMN Id, Ref. 3 GPP TS 23.003 [8]).	
mnc	Mobile Network Code, MNC (part of the PLMN Id, Ref. 3 GPP TS 23.003 [8]).	
msTxPwrMaxCCH	Maximum Transmission Power for a Mobile Station on a CCH. Attribute description Ref 3GPP TS 45.008 [5] (MS_TXPWR_MAX_CCH)	
ncc	<b>IOCs <u>GsmCell</u> and <u>ExternalGsmCell</u>:</b> Network Colour Code, NCC (part of BSIC). Ref 3GPP TS 44.018 [4]. <b>IOC <u>GsmRelation</u>:</b> Network Colour Code, NCC (part of BSIC. Ref 3GPP TS 44.018 [4]) for another GSM cell or the external GSM cell, that is broadcast in System Information in the Cell.	
plmnPermitted	Network Colour Code Permitted. Attribute description reference 3GPP TS 45.008 [5] (NCC_PERMITTED)	
rac	Routing Area Code, RAC. Ref 3GPP TS 44.018 [4].	
racc	Routing Area Colour Code, RACC. Ref 3GPP TS 44.018 [4].	
relationType	Type of relation: e.g. Intersystem relation, intra system relation.	
rxLevAccessMin	Minimum Access Level. Attribute description Ref 3GPP TS 45.008 [5] (RXLEV_ACCESS_MIN)	
tsc	Training Sequence Code, an attribute of the class channel in Ref 3GPP TS 44.018 [4]	
userLabel	<b>IOC <u>BssFunction</u>:</b> A user-friendly (and user assigned) name of the associated object. Inherited from ManagedFunction. <b>Other IOCs:</b> A user-friendly (and user assigned) name of the associated object.	

## 6.5.2 Constraints

None.

## 6.6 Particular information configurations

Not applicable.

## Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Jun 2001	S_12	SP-010283	--	--	Approved at TSG SA #12 and placed under Change Control	2.0.0	4.0.0
Sep 2001	S_13	SP-010477	001	--	Addition of mcc and mnc in the object model of GERAN	4.0.0	4.1.0
Dec 2001	S_14	SP-010650	002	--	Correction of references	4.1.0	4.2.0
Jun 2002	S_16	SP-020305	003	--	Addition of the attributes mcc and mnc in the object model of GERAN	4.2.0	4.3.0
Jun 2002	S_16	SP-020305	004	--	Correction of attribute descriptions in the Managed Object Class (MOC) GsmRelation of 32.652 (GERAN network resources IRP: NRM)	4.2.0	4.3.0
Jun 2002	S_16	SP-020304	005	--	Correction of supported IRP in system context	4.2.0	4.3.0
Sep 2002	S_17	SP-020494	006	--	UML corrections	4.3.0	4.4.0
Sep 2002	S_17	SP-020496	007	--	Add State Management	4.4.0	5.0.0
Sep 2002	S_17	SP-020496	008	--	Add new IRP IS methodology defined in 32.102	4.4.0	5.0.0

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# History

<b>Document history</b>		
V5.0.0	September 2002	Publication