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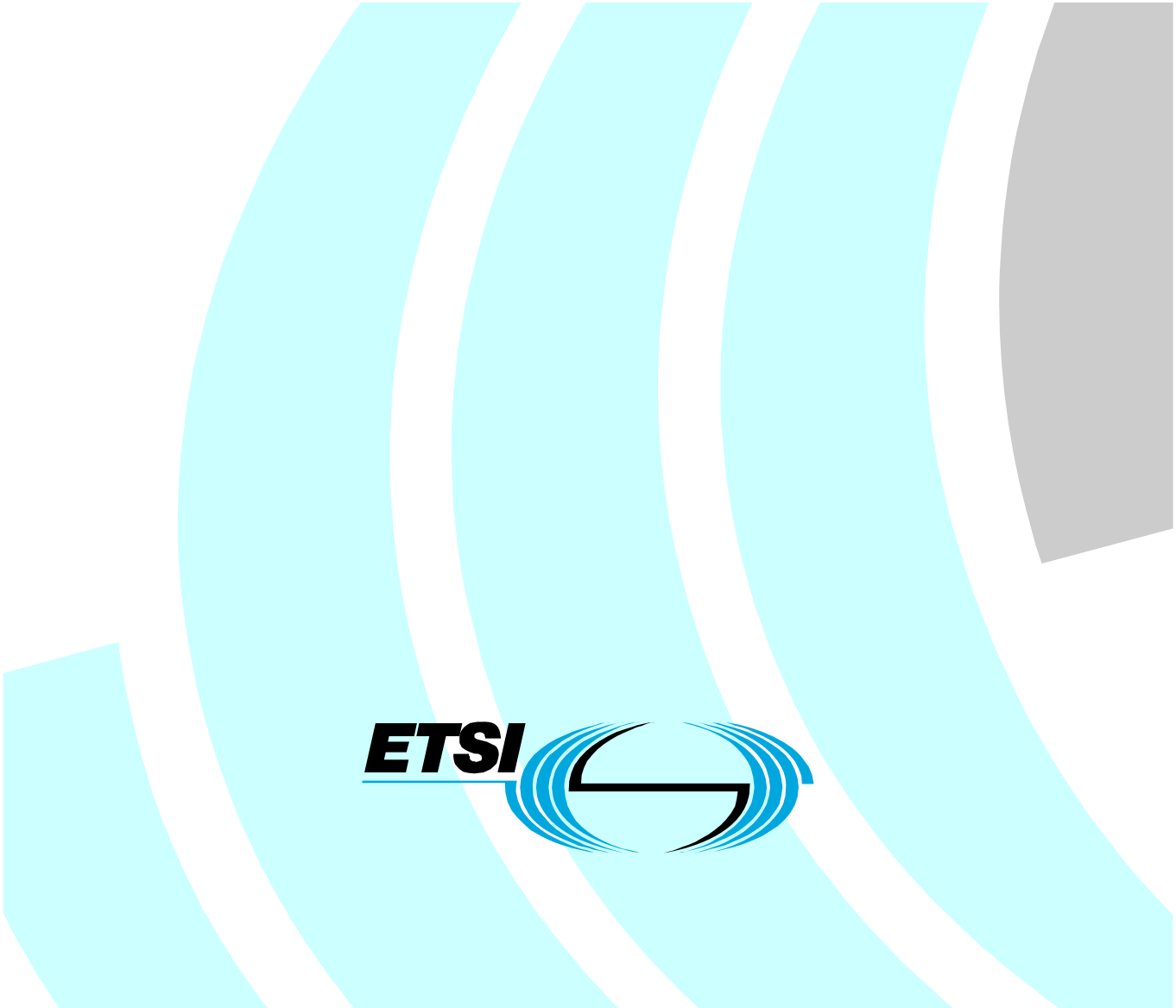
Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Network and Service Management; Network Resource Model; Part 2: Information Service



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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 2 of a multi-part deliverable covering Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Network and Service Management; Network Resource Model, as identified below:

Part 1: "Requirements";

Part 2: "Information Service";

Part 3: "eXtensible Markup Language (XML) Schema definition".

1 Scope

The present document identifies the Information Service for the manageable resources present in the NGN Transport and Service Layers.

The present document specifies the protocol neutral NGN Network Resource Model Information Service (IS). It reuses relevant parts of the IMS NRM IRP:IS in TS 132 732 [1] and the Generic NRM IRP: IS in TS 132 622 [2], either by direct reuse or sub-classing, and in addition to that defines NRM specific Information Object Classes.

This is the first version of the NGN Network Resource Model. The current version does not:

- capture all the attributes of the Network Resources. These will be addressed in future revisions of the present document;
- address the non-IMS based PSTN ISDN Emulation Subsystem, IPTV Subsystems and the additional Network Resources required to support Emergency Calls. These will be added in future revisions of the present document;
- provide guidance on the permitted value ranges of Attributes.

This version of the NRM is linked to 3GPP NRM using naming and inheritance, however a need to link the NRM to the TeleManagement Forum's Shared Information Data Model (SID) has been identified and will be addressed in future revisions of the present document. A comparison of 3GPP and SID inheritance is contained in annex A.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
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  - for informative references.

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NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI TS 132 732: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; IP Multimedia Subsystem (IMS) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS) (3GPP TS 32.732 Release 7)".

[2] ETSI TS 132 622: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM) (3GPP TS 32.622 Release 7)".

[3] ETSI TS 132 152: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Integration Reference Point (IRP) Information Service (IS) Unified Modelling Language (UML) repertoire (3GPP TS 32.152 Release 7)".

[4] ETSI ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture".

[5] ETSI ES 282 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control Sub-system (RACS); Functional Architecture".

[6] ETSI ES 282 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture; Network Attachment Sub-System (NASS)".

[7] ETSI TS 182 012: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IMS-based PSTN/ISDN Emulation Subsystem; Functional architecture".

[8] ETSI ES 282 007: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS); Functional architecture".

2.2 Informative references

Not applicable.

3 Abbreviations

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

AGCF	Access Gateway Control Function
AMF	Access Management Function
A-MGF	Access Media Gateway Function
A-RACF	Access Resource and Admission Control Function
ARF	Access Relay Function
ASF Type 1	Application Server Function Type 1
ASF Type 2	Application Server Function Type 2
ASF	Application Server Function
BGCF	Border Gateway Control Function
BGF	Border Gateway Function
C-BGF	Core Border Gateway Function
CLF	Connectivity session Location and repository Function
CNGCF	Customer Network Gateway Configuration Function

CRM	Customer Relationship Management
CSCF	Call Server Control Function
IBCF	Interconnection Border Control Function
I-BGF	Interconnection Border Gateway Function
I-CSCF	Interrogating Call Server Control Function
IMS	IP Multimedia System
IOC	Information Object Class
IRP	Integration Reference Point
IS	Information Service
ISDN	Integrated Services Digital Network
IWF	InterWorking Function
MGCF	Media Gateway Control Function
MRFC	Multimedia Resource Function Controller
MRFP	Multimedia Resource Function Processor
MTNM	Multi-Technology Network Management
NACF	Network Access Configuration Function
NASS	Network Attachment SubSystem
NGN	Next Generation Network
NOSI	NGN OSS Service Interface
NRM	Network Resource Module
OSS	Operations Support System
PDBF	Profile Data Base Function
PES	PSTN/ISDN Emulation Subsystem
PSTN	Public Switched Telephony Network
RACS	Resource Admission Control Subsystem
RCEF	Resource Control Enforcement Function
RDN	Relative Distinguished Name
RM	Resource Management
S-CSCF	Serving Call Server Control Function
SGF	Signalling Gateway Function
SID	Shared Information Data Model
SLF	Subscription Locator Function
SM	Service Management
SPDF	Service Policy Decision Function
TISPAN	Telecommunications and Internet converged Services and Protocols for Advanced Networking
TMF	TeleManagement Forum
T-MGF	Trunking Media Gateway Function
UAAF	User Access Authorization Function
UPSF	User profile service Function
XML	eXtensible Markup Language

4 High Level Model

In this clause, a high level context for the TISPAN Network Resource Model is given. The section is organized with an initial textual description, followed by a general diagram which aims to depict a high level model of the Transport and Service layers of the NGN.

The goal of the NRM within the current TISPAN release is to model the manageable network resources within the NGN Service and Transport Layers.

The high level decomposition of the NGN Service and Transport Layer entities, as identified in the TISPAN Architecture documents, is illustrated in figure 4.1. The Network Resource Model, provides a model of the manageable aspects of these entities.

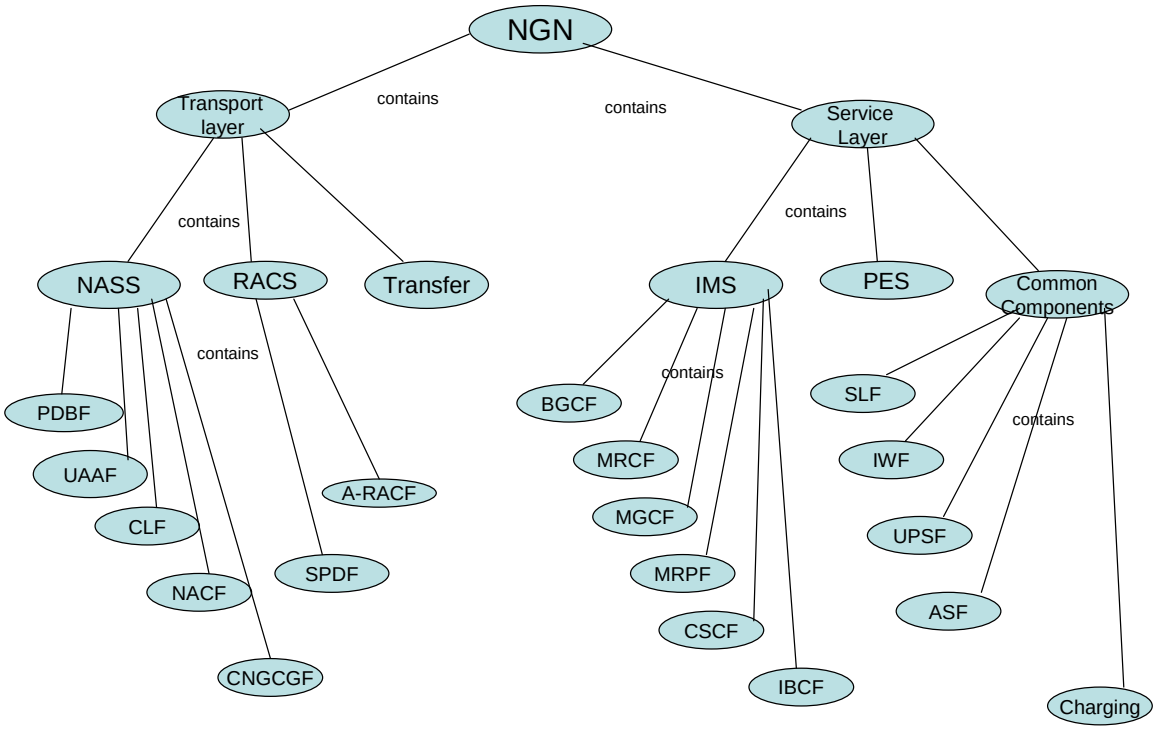

Figure 4.1: Decomposition of NGN Service and Transport Layers Entities

It should be noted that the entities contained in the Transfer Subsystem and IMS based PSTN/ISDN Emulation Subsystem (PES) have not been shown to simplify the above figure. They are however included in the following clauses.

5 Information Object Classes

5.1 Imported information entities and local labels

This clause identifies a list of information entities (e.g. information object class, information relationship, information attribute) that have been defined in other specifications and that are imported in the present document. This includes information entities from other specifications imported for inheritance purpose. Each element of this list is a pair (label reference, local label). The label reference contains the name of the specification where it is defined, the type of the information entity and its name. The local label of imported information entities can then be used throughout the specification instead of the label reference.

This information is provided in table 5.1.1.

Table 5.1.1: Imported information entities and local labels

Label reference	Local label
TS 132 622 [2], information object class, Link (see note 1)	Link
TS 132 622 [2], information object class, ManagedElement	ManagedElement
TS 132 622 [2], information object class, ManagedFunction	ManagedFunction
TS 132 732 [1], information object class, CscfFunction (see note 10)	CscfFunction
TS 132 732 [1], information object class, IcscfFunction (see note 10)	IcscfFunction
TS 132 732 [1], information object class, PcscfFunction (see note 10)	PcscfFunction
TS 132 732 [1], information object class, ScscfFunction (see note 10)	ScscfFunction
TS 132 732 [1], information object class, BgcfFunction (see note 10)	BgcfFunction
TS 132 732 [1], information object class, MgcfFunction (see note 10)	MgcfFunction
TS 132 732 [1], information object class, MrfcFunction (see note 10)	MrfcFunction
TS 132 732 [1], information object class MrfpFunction (see note 10)	MrfpFunction
TS 132 732 [1], information object class ImsMGwFunction (see note 10)	ImsMGwFunction
TS 132 732 [1], information object class, AsFunction (see note 2)	AsFunction
TS 132 732 [1], information object class, CamelImSsfAsFunction (see note 3)	CamelImSsfAsFunction
TS 132 732 [1], information object class, OsaScsAsFunction (see note 4)	OsaAsFunction
TS 132 732 [1], information object class, SipAsFunction (see note 5)	SipAsFunction
TS 132 732 [1], information object class, SlfFunction (see note 10)	SlfFunction
TS 132 732 [1], information object class, Link_As_Cscf (see note 6)	Link_As_Cscf
TS 132 732 [1], information object class, Link_As_Icscf (see note 7)	Link_As_Icscf
TS 132 732 [1], information object class, Link_As_Scscf (see note 8)	Link_As_Scscf
TS 132 732 [1], information object class, Link_As_Slf (see note 9)	Link_As_Slf
TS 132 732 [1], information object class, Link_Bgcf_Bgcf (see note 11)	Link_Bgcf_Bgcf
TS 132 732 [1], information object class, Link_Bgcf_Cscf (see note 11)	Link_Bgcf_Cscf
TS 132 732 [1], information object class, Link_Bgcf_Mgcf (see note 11)	Link_Bgcf_Mgcf
TS 132 732 [1], information object class, Link_Bgcf_Scscf (see note 11)	Link_Bgcf_Scscf
TS 132 732 [1], information object class, Link_Cscf_Cscf (see note 11)	Link_Cscf_Cscf
TS 132 732 [1], information object class, Link_Cscf_Icscf (see note 11)	Link_Cscf_Icscf
TS 132 732 [1], information object class, Link_Cscf_Mgcf (see note 11)	Link_Cscf_Mgcf
TS 132 732 [1], information object class, Link_Cscf_Mrfc (see note 11)	Link_Cscf_Mrfc
TS 132 732 [1], information object class, Link_Cscf_Pcscf (see note 11)	Link_Cscf_Pcscf
TS 132 732 [1], information object class, Link_Cscf_Scscf (see note 11)	Link_Cscf_Scscf
TS 132 732 [1], information object class, Link_Cscf_Slf (see note 11)	Link_Cscf_Slf
TS 132 732 [1], information object class, Link_Icscf_Slf (see note 11)	Link_Icscf_Slf
TS 132 732 [1], information object class, Link_Mgcf_Scscf (see note 11)	Link_Mgcf_Scscf
TS 132 732 [1], information object class, Link_Mrfc_Mrfp (see note 11)	Link_Mrfc_Mrfp
TS 132 732 [1], information object class, Link_Mrfc_Scscf (see note 11)	Link_Mrfc_Scscf
TS 132 732 [1], information object class, Link_Scscf_Scscf (see note 11)	Link_Scscf_Scscf
TS 132 732 [1], information object class, Link_Scscf_Slf (see note 11)	Link_Scscf_Slf

NOTE 1: It should be noted that the definition of Link Information Object Class imported from TS 132 622 [2] will need to be clarified as follows:
In TS 132 622 [2] it states that the Link IOC "represents a communication link or reference point between two network entities. The Link IOC does not indicate whether the represented communication link or reference point is a physical or logical entity".
In the context of the NGN, the Link represents the relationship between two "NGN Functional Entities".

NOTE 2: AsFunction IOC: In the TISPAN NRM, this IOC represents ASF Type 2 Application Servers (see ES 282 001 [4]) in the cases specified in the IOC definition of TS 132 732 [1]. Furthermore, the IOC is used for subclassing of TISPAN specific IOCs.

NOTE 3: CamelImSsfAsFunction IOC: In the TISPAN NRM, this IOC represents ASF Type 2 (see ES 282 001 [4]) of type IM-SSF Application Server using CAMEL (see ES 282 007 [8]).

NOTE 4: OsaScsAsFunction IOC: In the TISPAN NRM, this IOC represents ASF Type 2 (see ES 282 001 [4]) of type OSA SCS Application Server (see ES 282 007 [8]).

NOTE 5: SipAsFunction IOC: In the TISPAN NRM, this IOC represents ASF Type 2 (see ES 282 001 [4]) of type SIP Application Server (see ES 282 007 [8]).

NOTE 6: Link_As_Cscf IOC: In the TISPAN NRM, this IOC represents the ISC reference point between S-CSCF and ASF Type 2 (see ES 282 001 [4] and ES 282 007 [8]). TS 132 732 [1] positions this IOC between the AsFunction IOC and the CscfFunction IOC in the case of non-role based modeling of CSCF (see definition of the CscfFunction IOC of TS 132 732 [1]).

NOTE 7: Link_As_Icscf IOC: In the TISPAN NRM, this IOC represents the Ma reference point between I-CSCF and ASF Type 2 (see ES 282 001 [4] and ES 282 007 [8]).

Label reference	Local label
NOTE 8: Link_As_Scscf IOC: In the TISPAN NRM, this IOC represents the ISC reference point between S-CSCF and ASF Type 2 (see ES 282 001 [4] and ES 282 007 [8]).	
NOTE 9: Link_As_Slf IOC: In the TISPAN NRM, this IOC models the Dh reference point between SLF and ASF Type 2 (see ES 282 001 [4] and ES 282 007 [8]).	
NOTE 10: In the TISPAN NRM, this IOC represents the manageable aspects of the NGN Functional Entity (see ES 282 001 [4] and ES 282 007 [8]) with same name as the functionality the IOC is defined to represent in TS 132 732 [1].	
NOTE 11: In the TISPAN NRM, this link IOC represents the NGN reference point (see ES 282 001 [4] and ES 282 007 [8]) with same name as the reference point the IOC is defined to represent in TS 132 732 [1] and is to be used between the two IOCs specified by the IOC name (see definition of Link in TS 132 622 [2]).	

5.2 Class diagram

5.2.1 Attributes and relationships

This clause depicts the set of IOCs that encapsulate information relevant for modelling the NGN Transport and Service Layer. 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 figures below show the containment/naming hierarchy and the associations of the information object classes defined in the present document.

NOTE: In this release of the NRM, IOCs representing NRM Functions are contained by the ManagedElement IOC. This usage of the ManagedElement IOC presents issues in the context of the TISPAN NRM, related to the fact that this entity has in the definition the following text: "This IOC represents a telecommunication equipment or TMN entities within the telecommunications network that performs Managed Element (ME) functions, i.e. provides support and/or service to the subscriber" [2]. This may not be appropriate for some NGN Functions (e.g. Application Servers realized on a distributed systems). The question is if ManagedElement has a too strong correspondence with traditional Network Equipment and its management by Network or Element Management systems to be used for the TISPAN NRM.

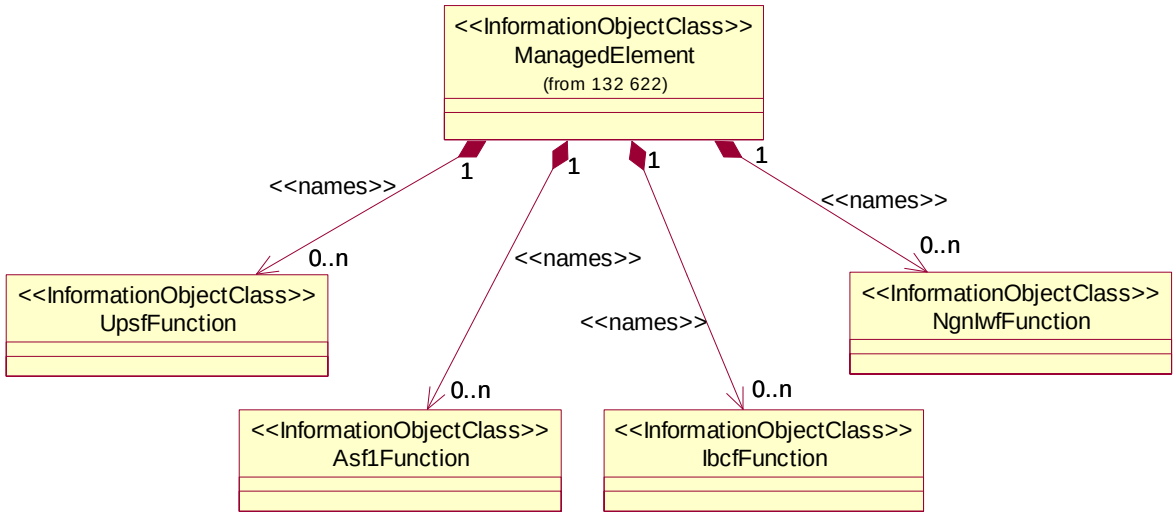

Figure 5.2.1.1: TISPAN NGN NRM Common Components Containment/naming

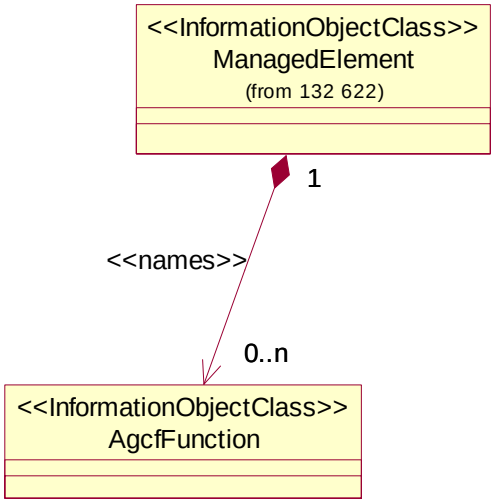

Figure 5.2.1.2: TISPAN NGN NRM PSTN/ISDN Emulation Subsystem Containment/naming

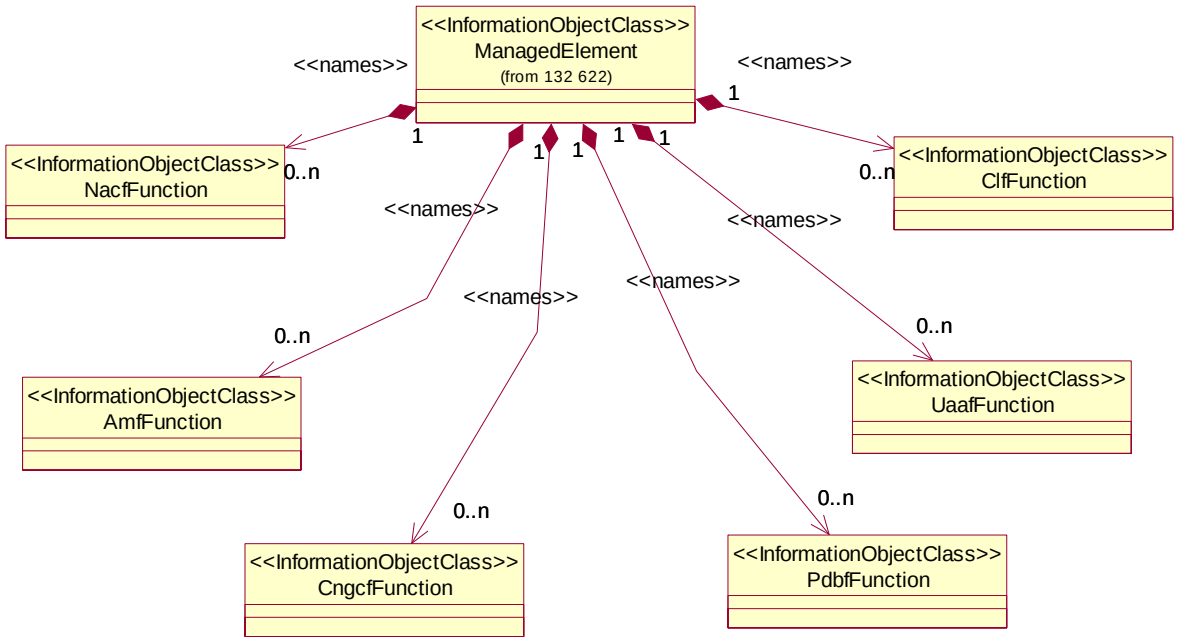

Figure 5.2.1.3: TISPAN NGN NRM NASS Containment/naming

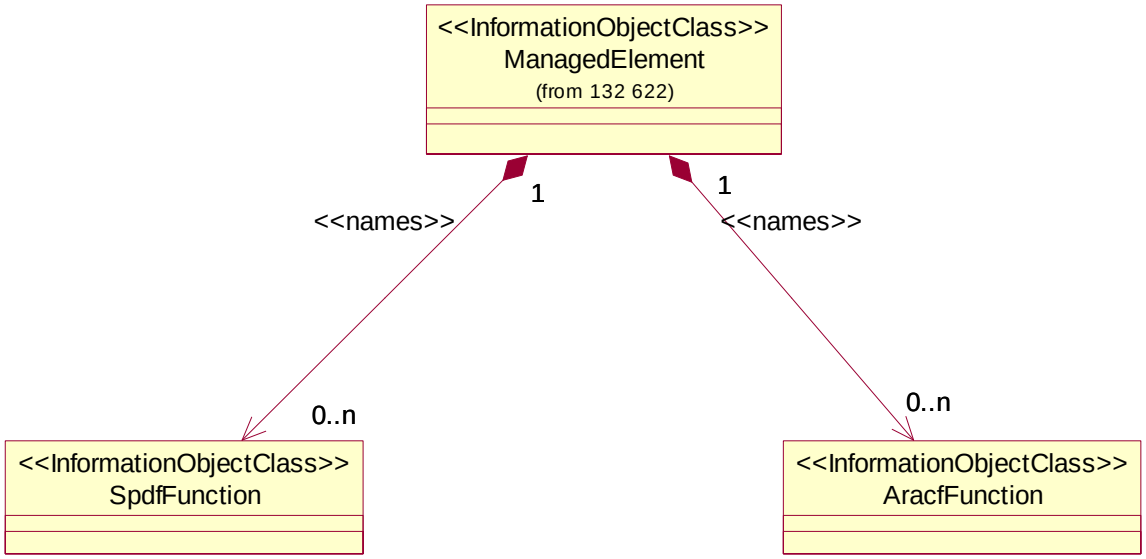

Figure 5.2.1.4: TISPAN NGN NRM RACS Containment/naming

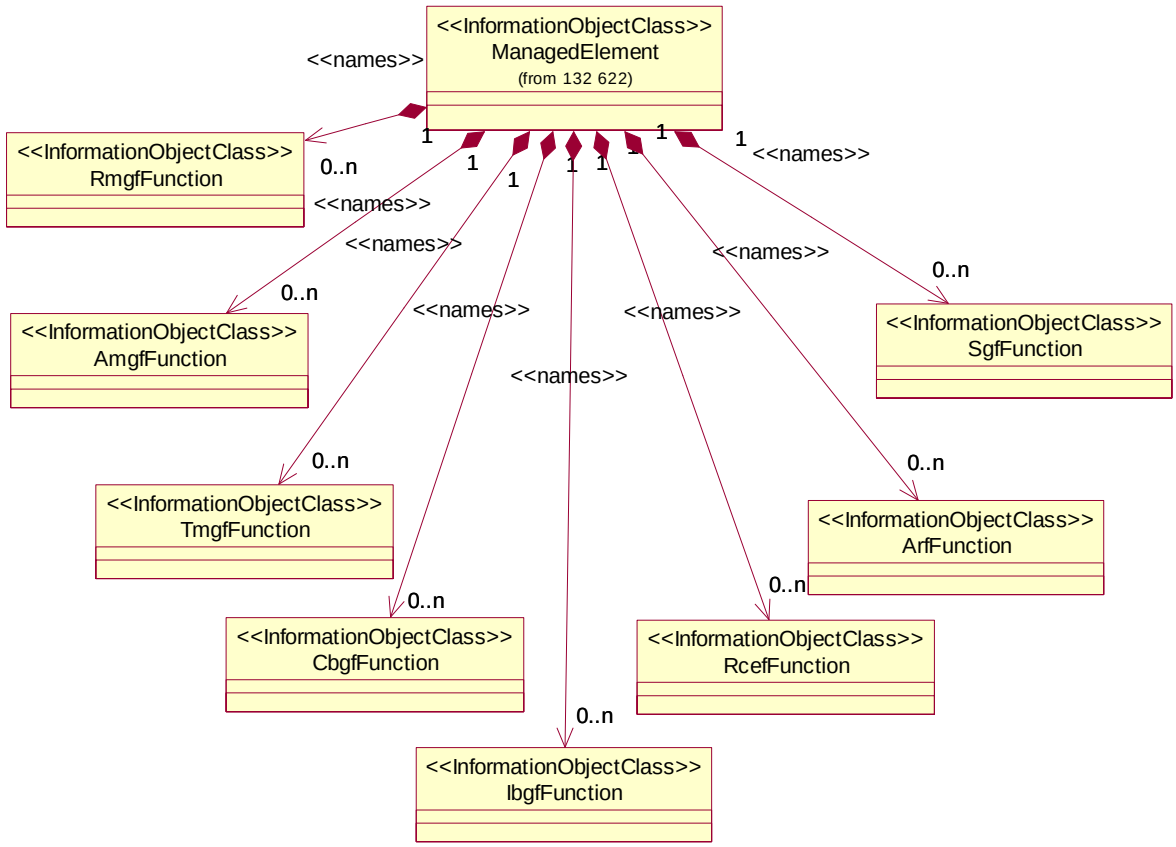

Figure 5.2.1.5: TISPAN NGN NRM Transport Layer Containment/naming

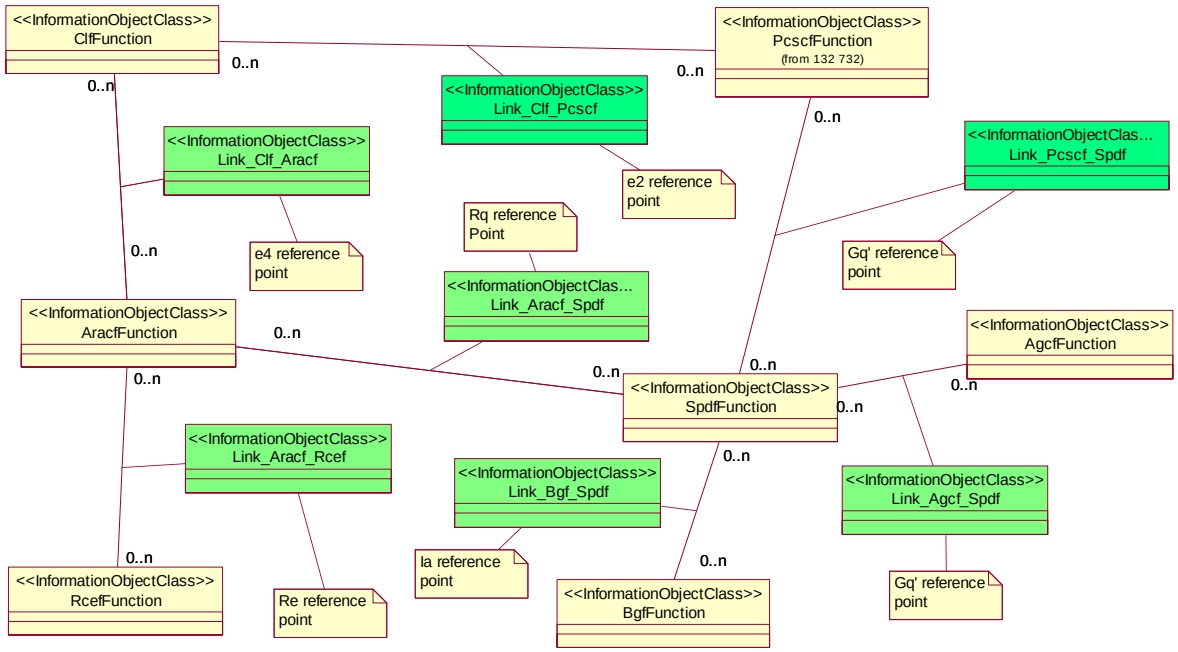

Figure 5.2.1.6: TISPAN NGN Link Associations 1

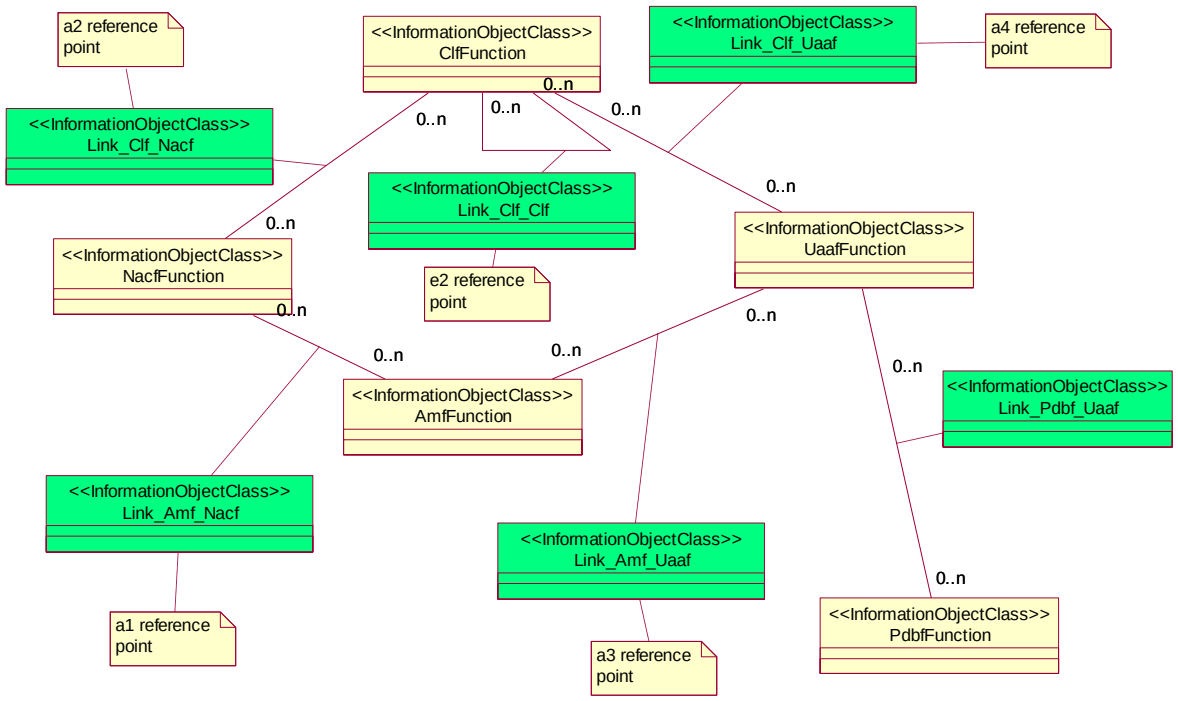

Figure 5.2.1.7: TISPAN NGN Link Associations 2

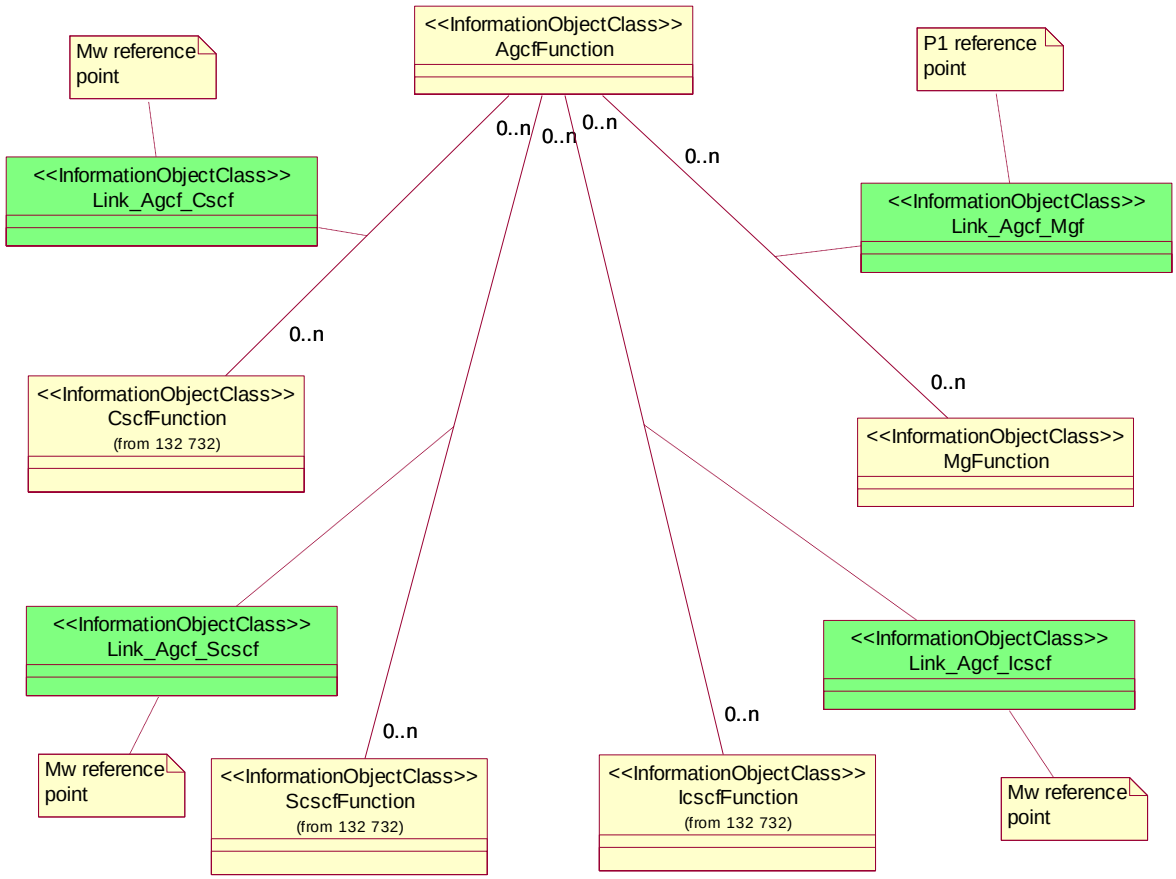

Figure 5.2.1.8: TISPAN NGN Link Associations 3

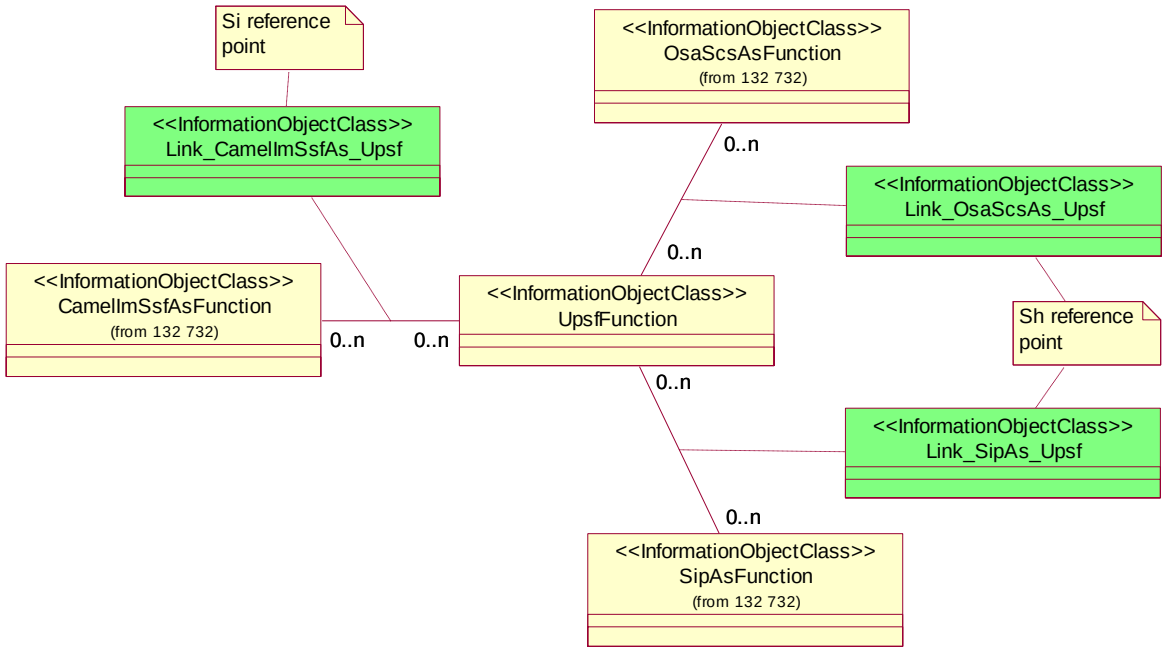

Figure 5.2.1.9: TISPAN NGN Link Associations 4

5.2.2 Inheritance

This clause depicts the inheritance relationships that exist between IOCs.

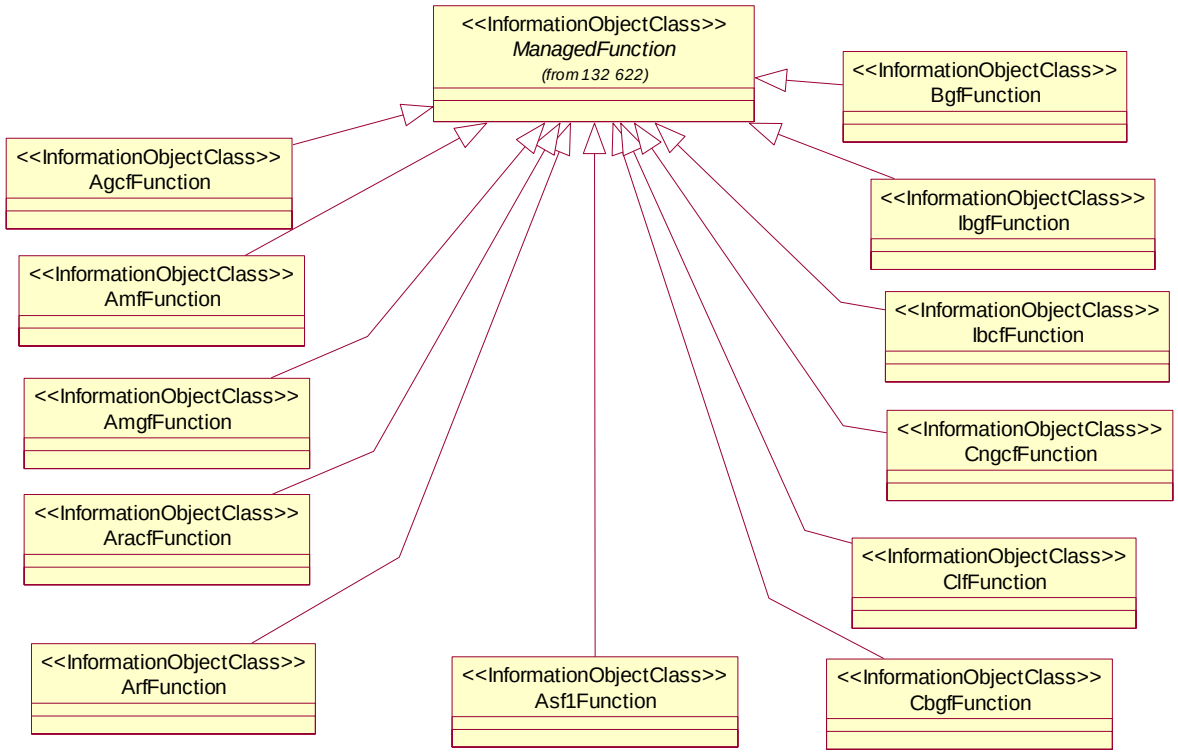

Figure 5.2.2.1: TISPAN NGN NRM Inheritance Hierarchy 1

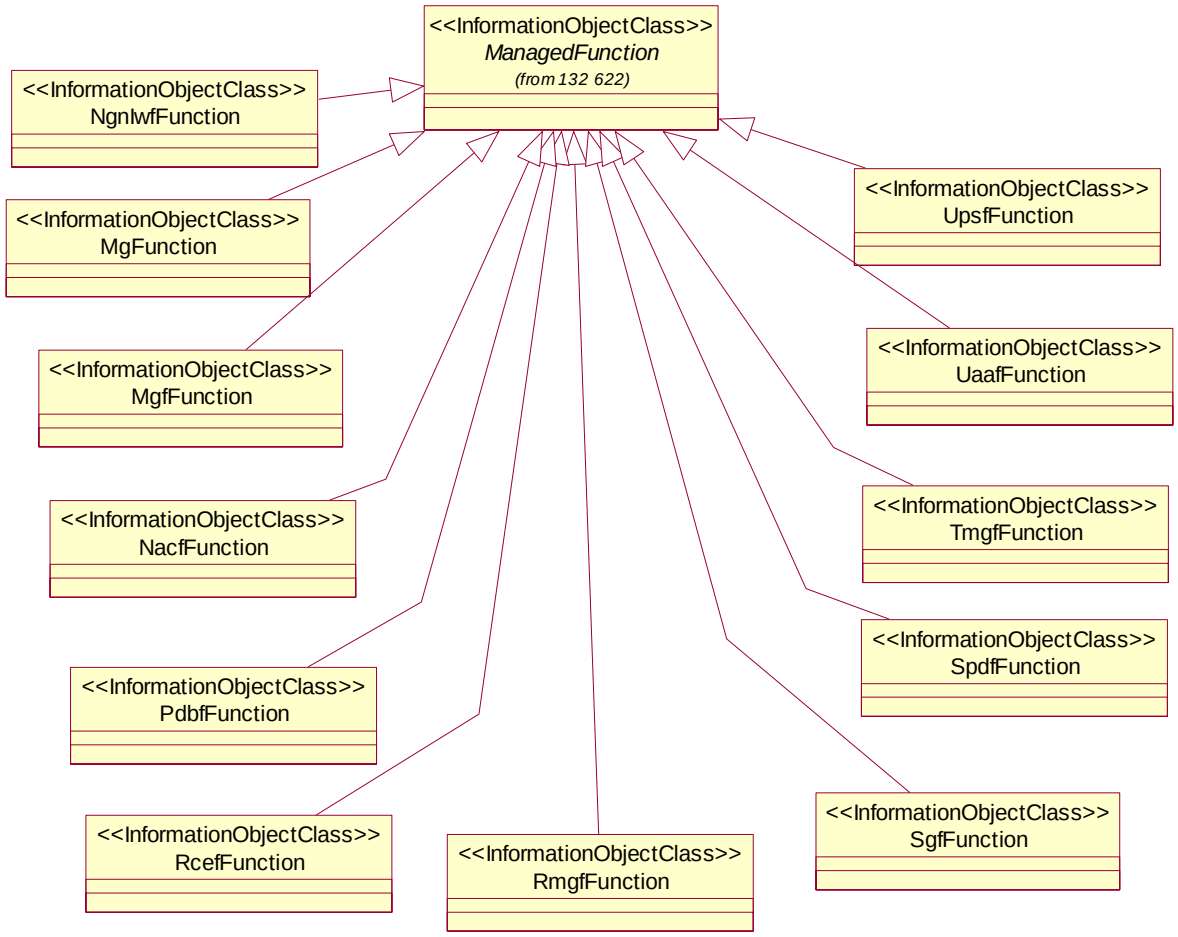

Figure 5.2.2.2: TISPAN NGN NRM Inheritance Hierarchy 2

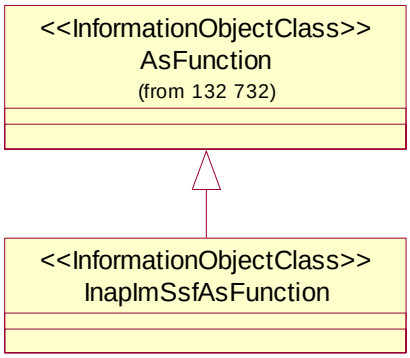

Figure 5.2.2.3: TISPAN NGN NRM Inheritance Hierarchy 3

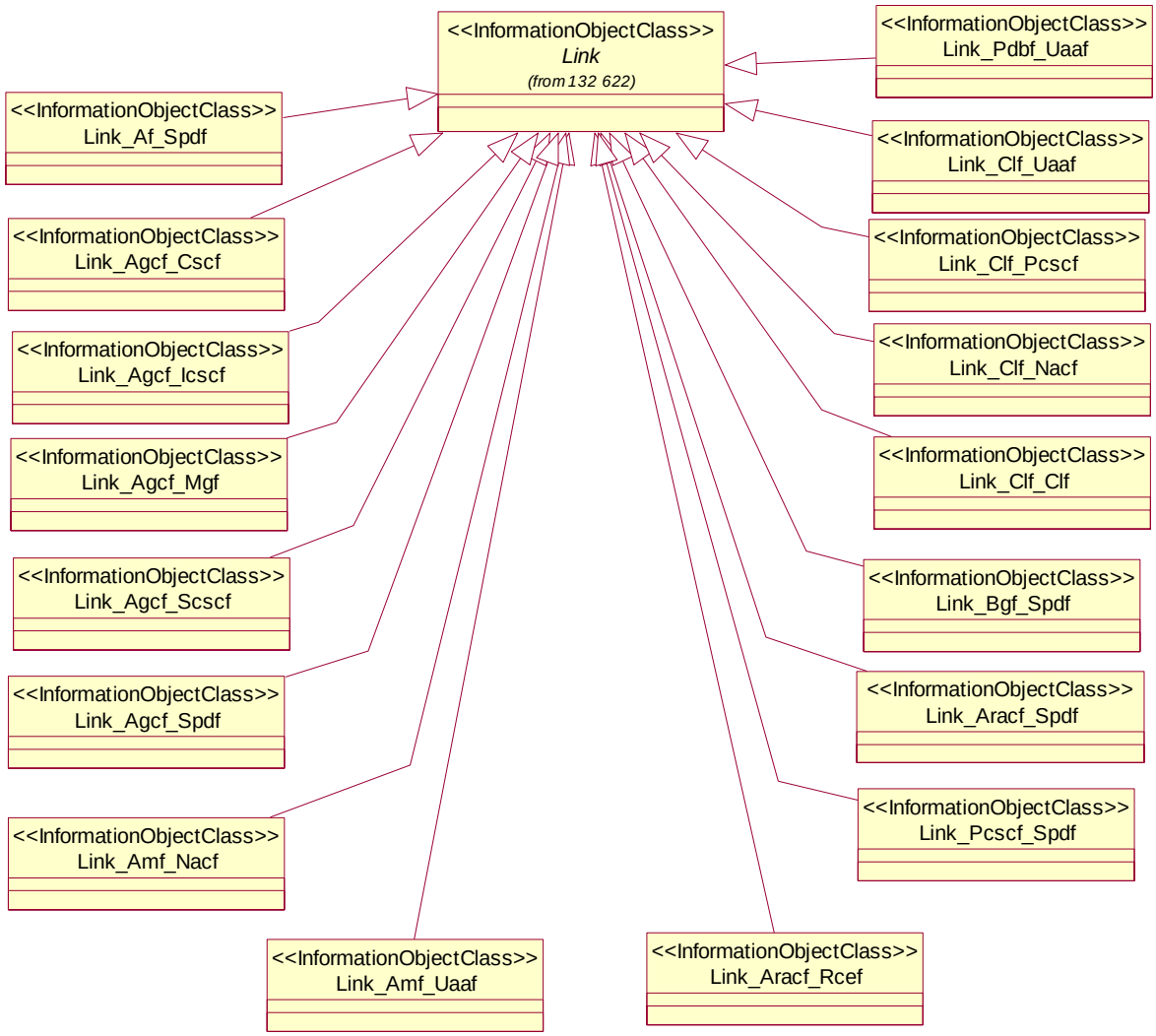

Figure 5.2.2.4: TISPAN NGN NRM Inheritance Hierarchy 4

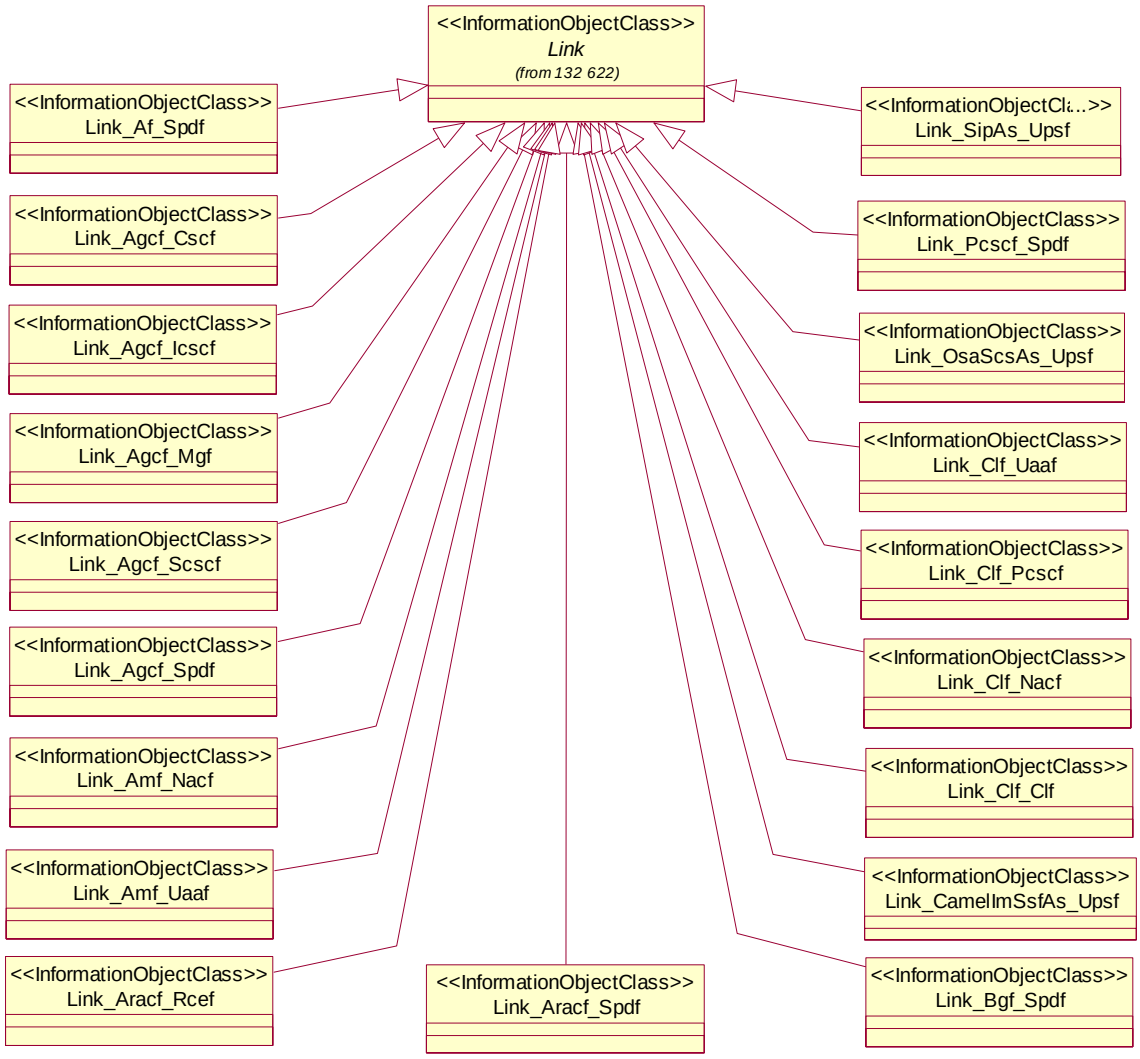

Figure 5.2.2.5: TISPAN NGN NRM Inheritance Hierarchy 5

5.3 Information object class definitions

5.3.1 Imported IOCs

A number of IOCs are imported to represent manageable aspects of the TISPAN NGN. See the import table and the notes of clause 5.1.

5.3.2 AgcfFunction

5.3.2.1 Definition

This IOC represents AGCF functionality. For more information about the AGCF, see TS 182 012 [7].

5.3.2.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
agcfFunctionId	M	M	-

5.3.3 AmfFunction

5.3.3.1 Definition

This IOC represents AMF functionality. For more information about the AMF, see ES 282 004 [6].

5.3.3.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
amfFunctionId	M	M	-

5.3.4 AmgfFunction

5.3.4.1 Definition

This IOC represents A-MGF functionality. For more information about the A-MGF, see ES 282 001 [4].

5.3.4.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
amgfFunctionId	M	M	-

5.3.5 AracfFunction

5.3.5.1 Definition

This IOC represents A-RACF functionality. For more information about the A-RACF, see ES 282 003 [5].

5.3.5.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
aracfFunctionId	M	M	-

5.3.6 ArfFunction

5.3.6.1 Definition

This IOC represents ARF functionality. For more information about the ARF, see ES 282 001 [4].

5.3.6.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
arfFunctionId	M	M	-

5.3.7 Asf1Function

5.3.7.1 Definition

This IOC represents ASF Type 1 functionality. For more information about the ASF Type 1, see ES 282 001 [4].

5.3.7.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
asf1FunctionId	M	M	-

5.3.8 BgfFunction

5.3.8.1 Definition

This IOC represents BGF functionality. For more information about the BGF, see ES 282 003 [5].

5.3.8.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
bgfFunctionId	M	M	-

5.3.9 CbgfFunction

5.3.9.1 Definition

This IOC represents C-BGF functionality. For more information about the C-BGF, see ES 282 001 [4].

5.3.9.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
cbgfFunctionId	M	M	-

5.3.10 ClfFunction

5.3.10.1 Definition

This IOC represents CLF functionality. For more information about the CLF, see ES 282 004 [6].

5.3.10.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
clfFunctionId	M	M	-

5.3.11 CngcfFunction

5.3.11.1 Definition

This IOC represents CNGCF functionality. For more information about the CNGCF, see ES 282 004 [6].

5.3.11.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
cngcfFunctionId	M	M	-

5.3.12 IbcfFunction

5.3.12.1 Definition

This IOC represents IBCF functionality. For more information about the IBCF, see ES 282 001 [4].

5.3.12.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
ibcfFunctionId	M	M	-

5.3.13 IbgfFunction

5.3.13.1 Definition

This IOC represents I-BGF functionality. For more information about the I-BGF, see ES 282 001 [4].

5.3.13.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
ibgfFunctionId	M	M	-

5.3.14 InapImSsfAsFunction

5.3.14.1 Definition

This IOC represents ASF Type 2 functionality of type IM-SSF Application Server using INAP. For more information about the ASF Type 2 of type IM-SSF Application Server using INAP, see ES 282 001 [4] and ES 282 007 [8].

5.3.14.2 Attributes

None in addition to inherited attributes.

5.3.15 NgnIwfFunction

5.3.15.1 Definition

This IOC represents IWF functionality. For more information about the IWF, see ES 282 001 [4].

5.3.15.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
ngnIwfFunctionId	M	M	-

5.3.16 MgfFunction

5.3.16.1 Definition

This IOC represents MGF functionality. For more information about the MGF, see ES 282 001 [4].

5.3.16.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
mgfFunctionId	M	M	-

5.3.17 NacfFunction

5.3.17.1 Definition

This IOC represents NACF functionality. For more information about the NACF, see ES 282 004 [6].

5.3.17.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
nacfFunctionId	M	M	-

5.3.18 PdbfFunction

5.3.18.1 Definition

This IOC represents PDBF functionality. For more information about the PDBF, see ES 282 004 [6].

5.3.18.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
pdbfFunctionId	M	M	-

5.3.19 RcefFunction

5.3.19.1 Definition

This IOC represents RCEF functionality. For more information about the RCEF, see ES 282 001 [4].

5.3.19.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
rcefFunctionId	M	M	-

5.3.20 SgfFunction

5.3.20.1 Definition

This IOC represents SGF functionality. For more information about the SGF, see ES 282 001 [4].

5.3.20.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
sgfFunctionId	M	M	-

5.3.21 SpdfFunction

5.3.21.1 Definition

This IOC represents SPDF functionality. For more information about the SPDF, see ES 282 003 [5].

5.3.21.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
spdfFunctionId	M	M	-

5.3.22 TmgfFunction

5.3.22.1 Definition

This IOC represents T-MGF functionality. For more information about the T-MGF, see ES 282 001 [4].

5.3.22.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
tmgfFunctionId	M	M	-

5.3.23 UaafFunction

5.3.23.1 Definition

This IOC represents UAAF functionality. For more information about the UAAF, see ES 282 004 [6].

5.3.23.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
uaafFunctionId	M	M	-

5.3.24 UpsfFunction

5.3.24.1 Definition

This IOC represents UPSF functionality. For more information about the UPSF, see ES 282 001 [4].

5.3.24.2 Attributes

Attribute name	Support Qualifier	Read Qualifier	Write Qualifier
upsfFunctionId	M	M	-

5.3.25 Link_Agcf_Cscf

5.3.25.1 Definition

This IOC models the Mw reference point as defined in TS 182 012 [7].

5.3.26 Link_Agcf_Icscf

5.3.26.1 Definition

This IOC models the Mw reference point as defined in ES 182 012 [7].

5.3.27 Link_Agcf_Mgf

5.3.27.1 Definition

This IOC models the P1 reference point as defined in TS 182 012 [7].

5.3.28 Link_Agcf_Scscf

5.3.28.1 Definition

This IOC models the Mw reference point as defined in TS 182 012 [7].

5.3.29 Link_Agcf_Spdf

5.3.29.1 Definition

This IOC models the Gq' reference point as defined in ES 282 003 [5].

5.3.30 Link_Amf_Nacf

5.3.30.1 Definition

This IOC models the a1 reference point as defined in ES 282 004 [6].

5.3.31 Link_Amf_Uaaf

5.3.31.1 Definition

This IOC models the a3 reference point as defined in ES 282 004 [6].

5.3.32 Link_Aracf_Clf

5.3.32.1 Definition

This IOC models the e4 reference point as defined in ES 282 003 [5].

5.3.33 Link_Aracf_Rcef

5.3.33.1 Definition

This IOC models the Re reference point as defined in ES 282 003 [5].

5.3.34 Link_Aracf_Spdf

5.3.34.1 Definition

This IOC models the Rq reference point as defined in ES 282 003 [5].

5.3.35 Link_Bgf_Spdf

5.3.35.1 Definition

This IOC models the Ia reference point as defined in ES 282 003 [5].

5.3.36 Link_CamelImSsfAs_Upsf

5.3.36.1 Definition

This IOC models the Si reference point between ASF Type 2 CAMEL IM-SSF Application Server and UPSF as defined in ES 282 007 [8].

5.3.37 Link_Clf_Clf

5.3.37.1 Definition

This IOC models the e2 reference point as defined in ES 282 004 [6].

5.3.38 Link_Clf_Nacf

5.3.38.1 Definition

This IOC models the a2 reference point as defined in ES 282 004 [6].

5.3.39 Link_Clf_Pcscf

5.3.39.1 Definition

This IOC models the e2 reference point as defined in ES 282 004 [6].

5.3.40 Link_Clf_Uaaf

5.3.40.1 Definition

This IOC models the a4 reference point as defined in ES 282 004 [6].

5.3.41 Link_OsaScsAs_Upsf

5.3.41.1 Definition

This IOC models the Sh reference point between ASF Type 2 OSA SCS Application Server and UPSF as defined in ES 282 007 [8].

5.3.42 Link_Pcscf_Spdf

5.3.42.1 Definition

This IOC models the Gq' reference point as defined in ES 282 003 [5].

5.3.43 Link_Pdbf_Uaaf

5.3.43.1 Definition

This IOC models the reference point between PDBF and UAAF as defined in ES 282 004 [6].

5.3.44 Link_SipAs_Upsf

5.3.44.1 Definition

This IOC models the Sh reference point between ASF Type 2 SIP Application Server and UPSF as defined in ES 282 007 [8].

5.4 Information relationship definitions

Void.

5.5 Information attribute definitions

5.5.1 Definition and legal values

The following table defines the attributes that are present in several information object classes of the present document.

Attribute Name	Definition	Legal Values
agcfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
amfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
amgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
aracfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
arfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
asf1FunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
bgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
cbgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	

Attribute Name	Definition	Legal Values
clfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
cngcfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
ibcfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
ibgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
mgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
ngnIwfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
nacfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
pdbfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
rcefFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
sgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
spdfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
tmgfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
uaafFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	
upsfFunctionId	An attribute whose 'name+value' can be used as an RDN when naming an instance of the IOC. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance	

5.5.2 Constraints

Name	Definition
-	-

5.6 Common notifications

Void.

5.7 Particular information configurations

Not applicable.

Annex A (informative): Mapping to 3GPP and TMF SID

As noted in the scope, this version the NRM is linked to 3GPP NRM using naming and inheritance, however a need to link the NRM to the TeleManagement Forum's Shared Information Data Model (SID) has been identified and will be addressed in future revisions of the present document.

A.1 Example Scenarios

A.1.1 SID based OSS

An OSS which use SID (typically any CRM or SM and Some RM OSSs) will expect to see SID based objects via the NOSIs it uses. Therefore if the OSS needs to use the service exposed by a NOSI providing a Network Resource service, it will expect to see SID based IOCs.

A1.2 SID based resources

The NGN Resources being managed may be modelled using 3GPP, IEEE and TMF (e.g. MTNM) standards. Thus some resources will be SID based (e.g. MTNM) and some (e.g. IMS) will be 3GPP based.

A.2 Comparison of 3GPP and SID inheritance

A.2.1 GPP NRM Inheritance

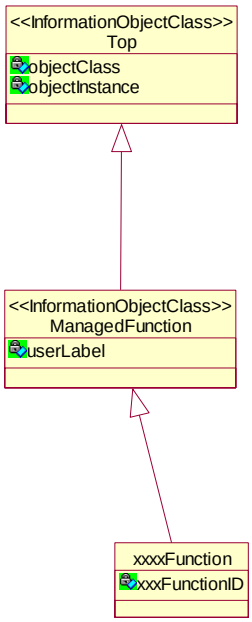

Figure A.1: 3GPP Inheritance

Inherited Attributes

Attribute	Inherited From
objectClass	Top
objectInstance	Top
Userlabel	ManagedFunction

Relationships

None

A.2.2 SID Inheritance

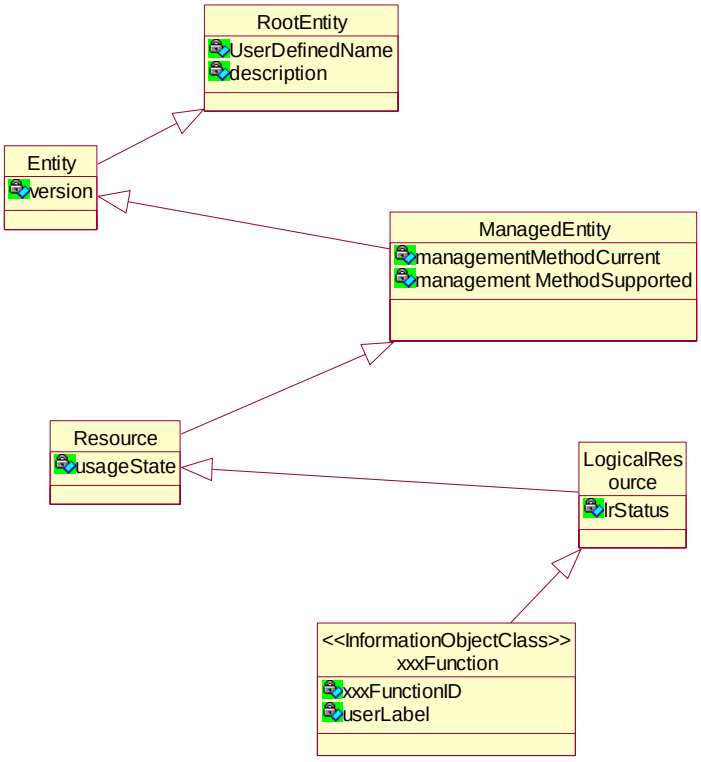

Figure A.2: TMF Inheritance

Inherited Attributes

Attribute	Inherited From
CommonName	RootEntity
Description	RootEntity
Version	Entity
managementMethodCurrent	ManagedEntity
managementMethodSupported	ManagedEntity
usageState	Resource
lrStatus	LogicalResource

Relationships

Attribute	Inherited From
SpecificesResource	Resource
ResourceTakesOnRoles	Resource
RolesDescribeLogicalResource	Logical Resource
ResourceCharacterizedBy	Resource
LogicalResourceImplementation	Logical Resource
SupportedMgmtMethods	ManagedEntity
DescribedByMgmtInfo	ManagedEntity

A.3 Alarm Management Example

This clause identifies Candidate Alarm Management Use Cases based on the above scenarios.

A.3.1 Problem Statement

An Alarm Management System needs to integrate alarms coming from mobile networks (3GPP Based), fixed networks (TISPAN based) and transport technologies (e.g. MTNM based). The Alarm Management System then needs to present unified alarm situation upwards (SID based).

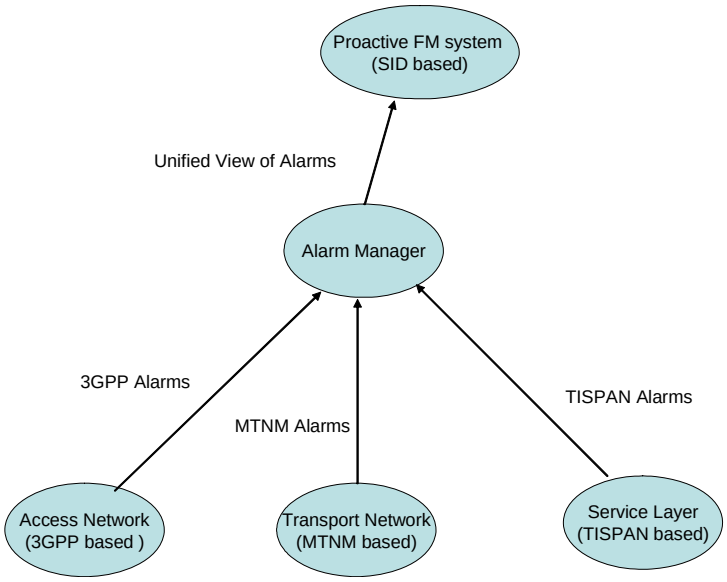

Figure A.3: Alarm Management Example

Figure A.3 provides an example of the need to collect alarms from 3GPP based Access Networks, MTNM Based Transport Networks and a TISPAN based NGN Service layer and to provide a unified view of these alarms to a SID based proactive Fault management System.

A.3.2 Requirements

There is a need to:

- integrate data from mobile networks, the TISPAN NGN and transport technologies; and
- to present this data in a SID based form.

A.3.3 Candidate Use Cases

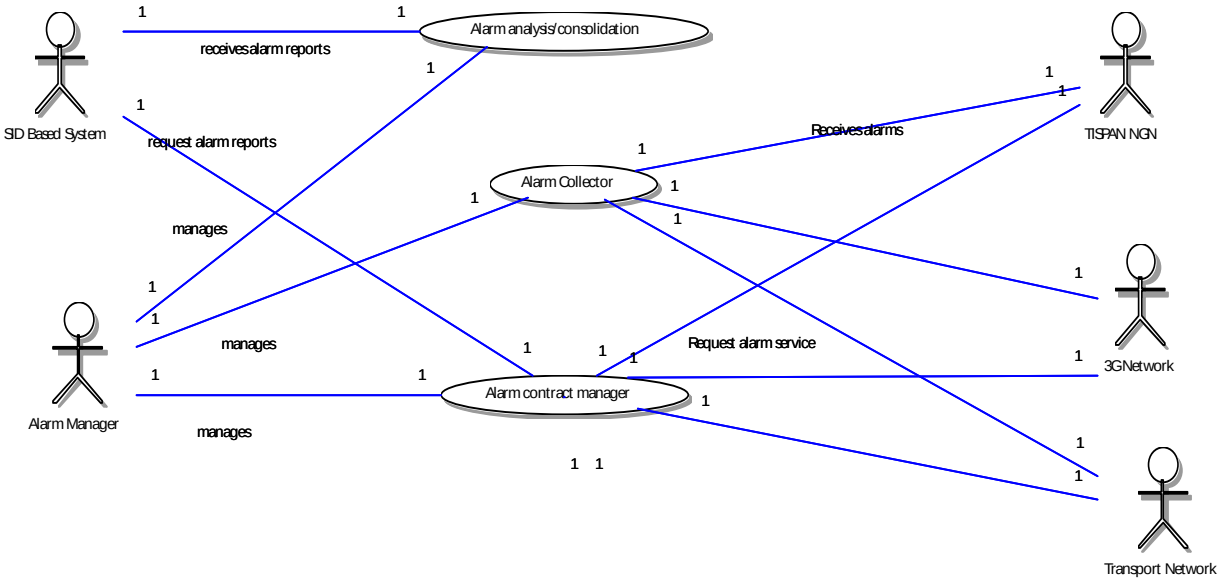

Figure A.4: Candidate Use Cases

Alarm Contract Manager

- subscribe/unsubscribe/configure Alarm NOSI

Alarm Collector

- receive Alarms from NRM NOSIs

Alarm Analysis/Consolidation

- provides Alarm report NOSIs to other systems

History

Document history		
V2.0.0	March 2008	Publication