3GPP SA5 Overview

OAM&P part

2 July 2010

Topics

- Requirements & Architecture
- IRP Methodology
- 3GPP IRPs
- NRM IRPs
- Interface IRPs
- SON
- Work Items

Requirements & Architecture Specifications

- TS 32.101 Principles and high level requirements
- TS 32.102 Architecture
- TS 32.111-1 3G Fault Management requirements
- TS 32.140 SuM requirements
- TS 32.141 SuM architecture
- TS 32.300 Name convention for Managed Objects
- TS 32.401 Performance Management concept and requirements
- TS 32.500 SON concepts and requirements
- TS 32.511 ANR management concepts and requirements
- TS 32.541 SON self-healing concepts and requirements
- TS 32.600 Configuration Management concept and high-level requirements

3GPP Management Reference Model (32.101)

1: Between the Network Elements (NEs) and the Element Manager (EM) of a single broadband wireless network

2: Between the Element Manager (EM) and the Network Manager (NM) of a single broadband wireless network

3: Between the Network Managers and the Enterprise Systems of a single broadband wireless network

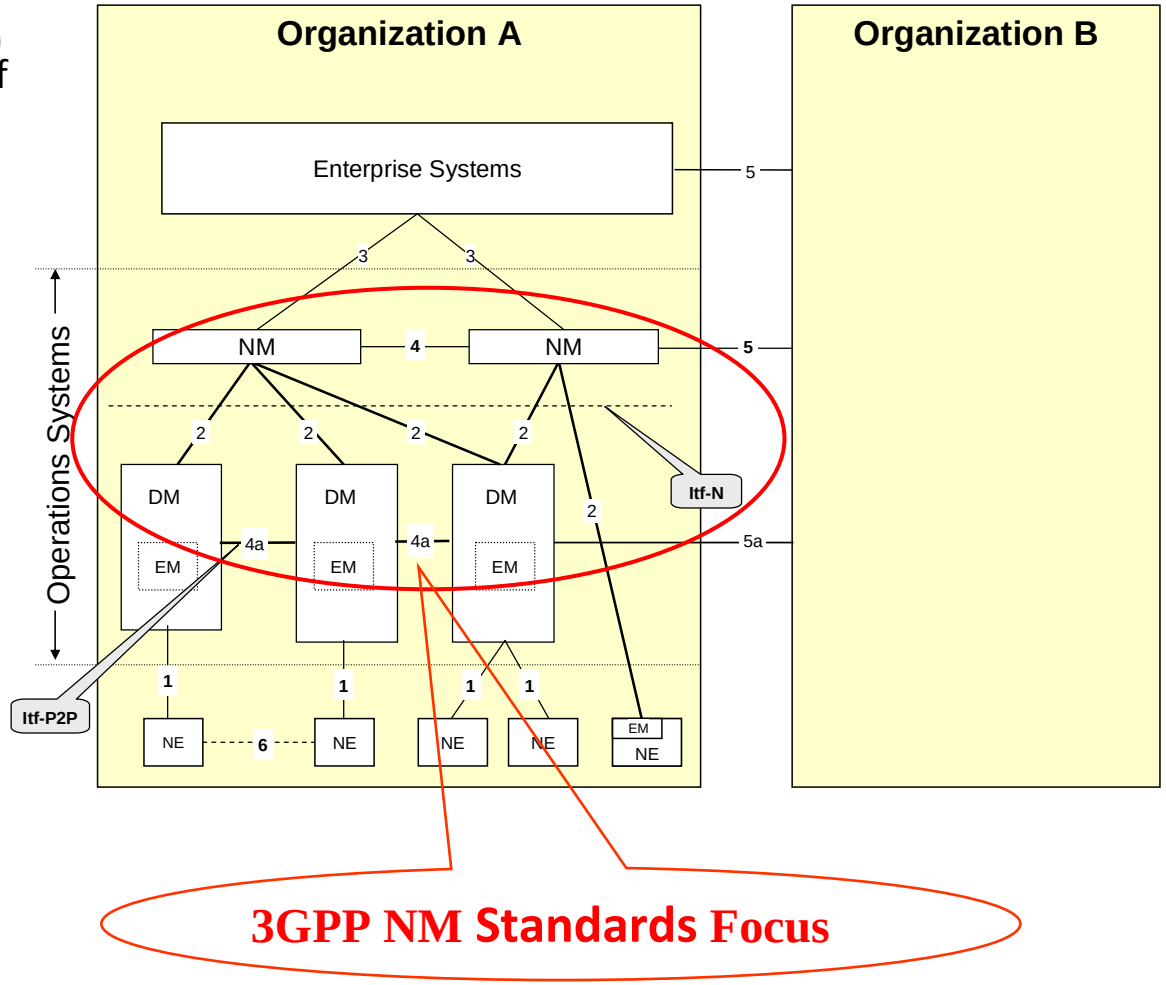
4: Between the Network Managers (NMs) of a single broadband wireless network

4a: Between the Domain Managers (DMs) of a single broadband wireless network

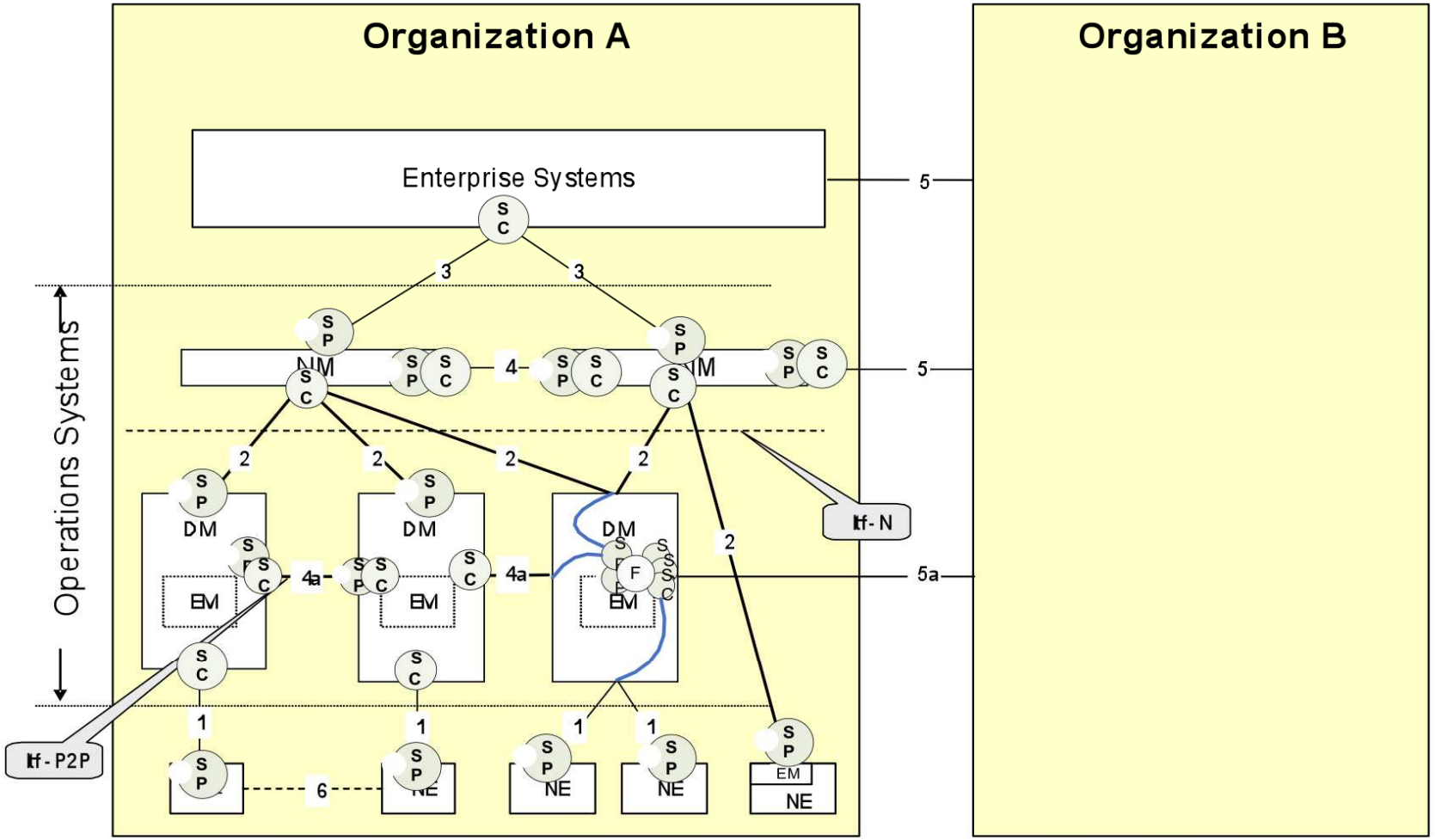
5: Between Enterprise Systems & Network Managers of different broadband wireless networks

5a: Between the Domain Managers (DMs) of different broadband wireless networks

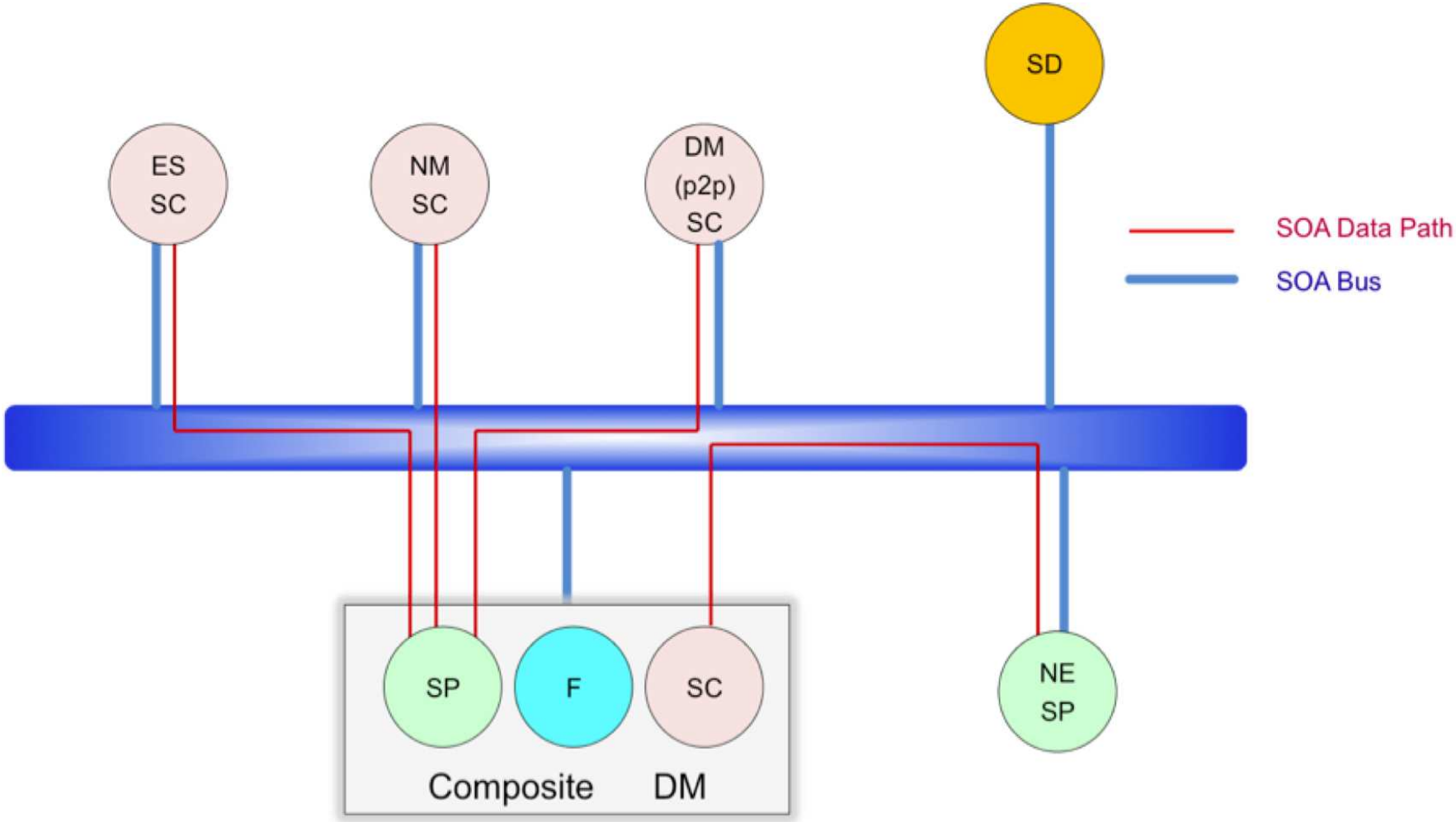
6: Between Network Elements (NEs)



SOA Elements on 3GPP Management Reference Model (32.101)



SOA-based Representation of the 3GPP Management Reference Model (32.101)



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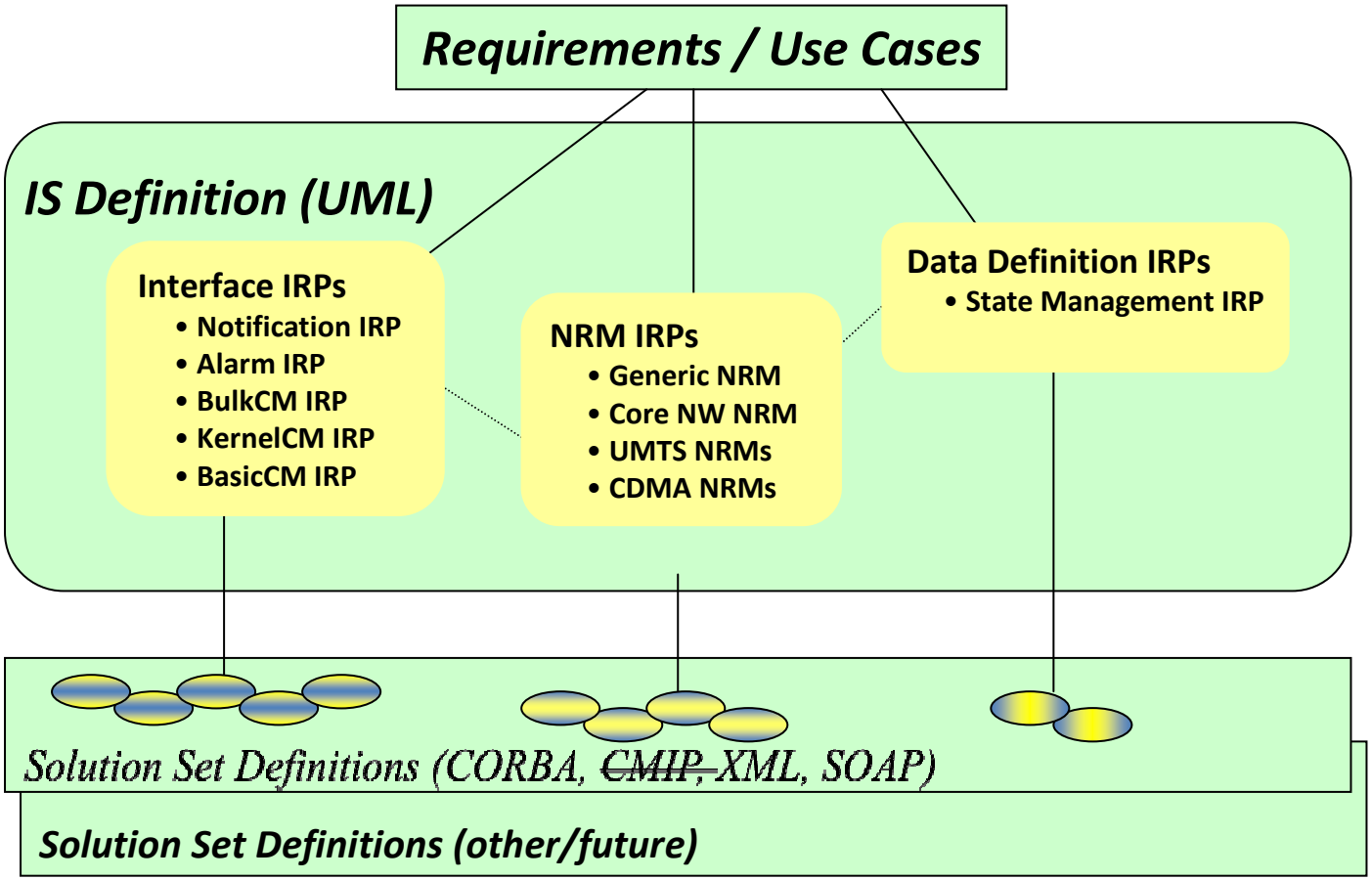
IRP Methodology Specifications

- TS 32.150 Integration Reference Point (IRP) Concept and definitions
- TS 32.151 IRP Information Service (IS) template
- TS 32.152 IRP IS Unified Modeling Language (UML) repertoire
- TS 32.153 IRP technology specific templates, rules and guidelines
- TS 32.154 Backward and Forward Compatibility Concept and definitions
- TS 32.155 Requirements template

IRP Concept

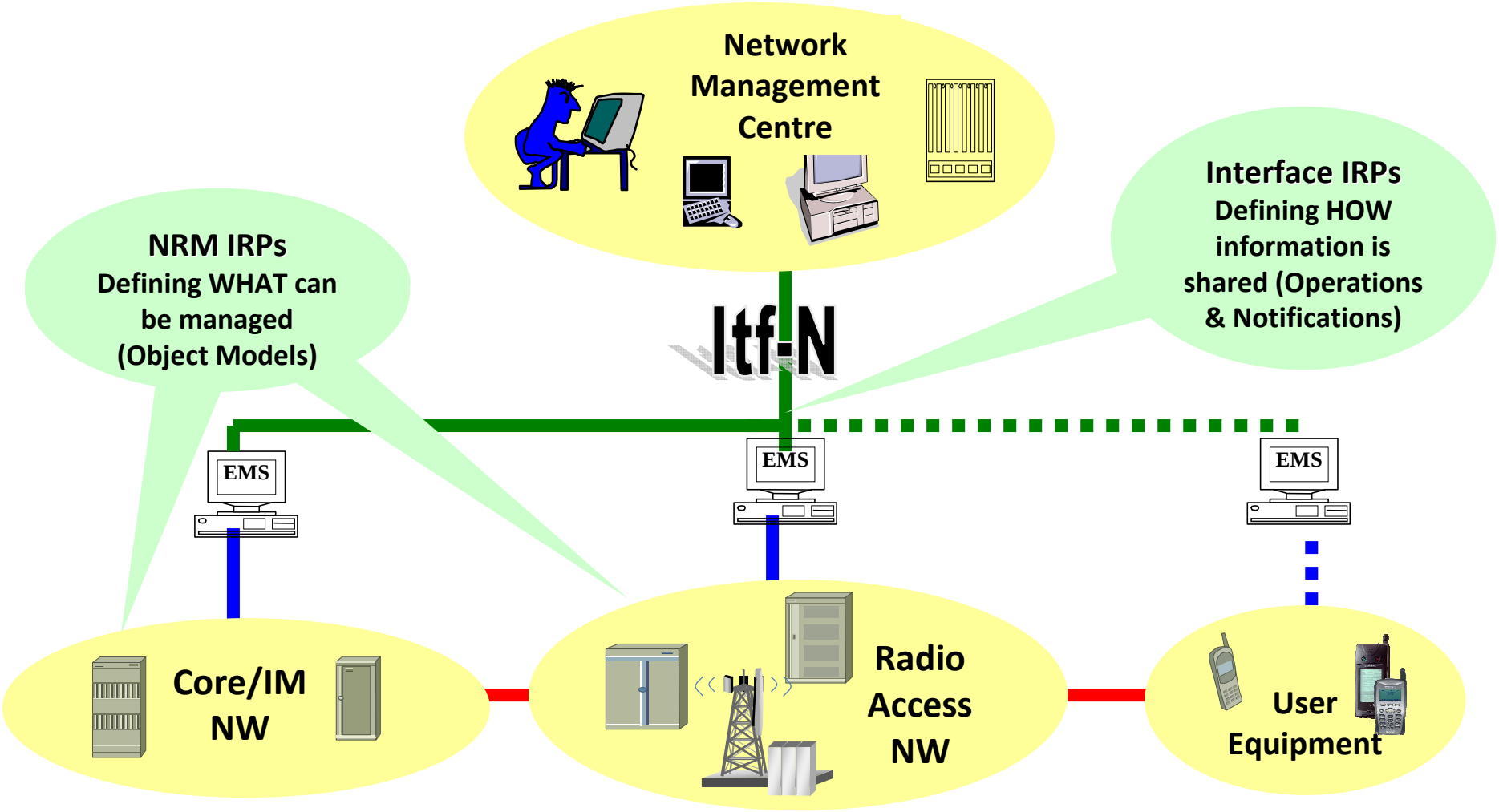


Relatively stable over long period of time

Change only with respect to addition and extensions

Change with new/better Technologies

Interface IRP vs. NRM IRP



IRP Development Principles

NRM IRP Extendibility

- vsDataContainer
- Rule-based NRM extensions (e.g. sub-classing)
- **Enabling: Technology & vendor specific NRM extensions**
- **3GPP2 NRMs are technology-specific NRM extensions**

Interface IRP Flexibility

- Flexible use of qualifiers “mandatory”, “optional”, “visibility” for operation, notifications and/or parameters
- NRM/Technology-neutrality & avoiding competing procedures
- **Enabling: wide applicability, phased introduction capabilities & broad industry adoption**
- **NOT JUST FOR WIRELESS**

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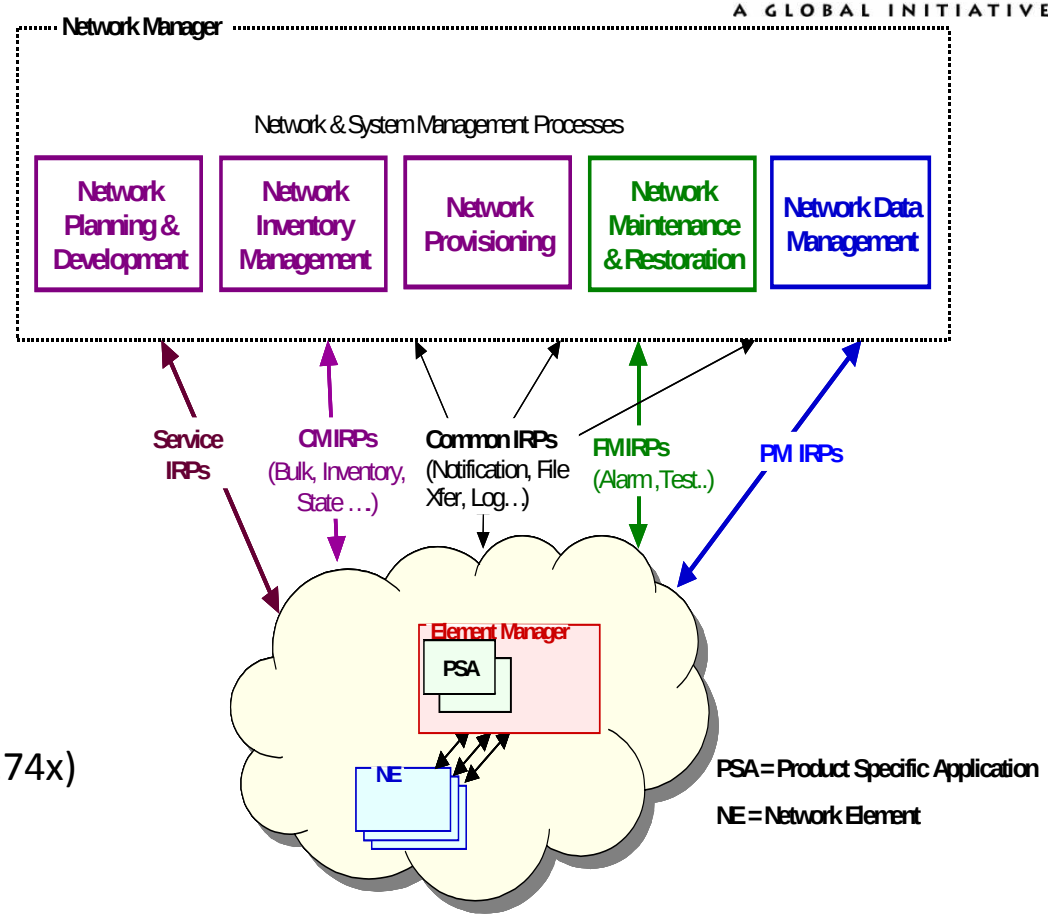
Available IRP Toolset

- **Interface IRPs**
  - Common IRP (32.3xx)
  - AM-related IF IRP (32.11x)
  - PM-related IF IRP (32.41x)
  - Trace-related IF IRP (32.44x)
  - CM-related IF IRP (32.60x,61x,66x)
  - SON-related IF IRP (32.50x, 53x)
- **NRM IRPs**
  - Common NRM IRP (32.62x)
  - 3GPP AN NRM IRP (32.64x,65x,76x)
  - 3GPP H(e)NS NRM IRP (32.77x,78x)
  - 3GPP CN NRM IRP (32.63x,73x,75x)
  - Service-related NRM IRP(32.17x)
  - Supporting NRM IRP (32.69x,71x,72x,74x)
  - SON-related NRM IRP(32.52x)
- **Data Definitions**
  - UDC Information Model (32.18x)
  - Trace&PM data (32.40x,42x,45x)
  - State Management IRP (32.67x)



IRP Specification Structure

- 32.xy1 IRP Requirements
- 32.xy2 IRP Information Service (IS)
- 32.xy3 IRP CORBA Solution Set (SS)
- 32.xy4 IRP CMIP Solution Set *(retired)*
- 32.xy5 IRP XML Definitions
  (applicable for NRMs & notification emitting Interface IRPs)
- 32.xy7 IRP SOAP Solution Set
  (applicable for Interface IRPs)

Note: at the beginning of R10, xx5 and xx7 are merged into xx6

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Rel-9 NRM IRPs

Common NRM IRP

- Generic NRM IRP (32.62x)

Services related NRM IRPs

- SuM NRM IRP (32.17x)

3GPP AN NRM IRPs

- UTRAN NRM IRP (32.64x)
- GERAN NRM IRP (32.65x)
- E-UTRAN NRM IRP (32.76x)

3GPP CN NRM IRPs

- CN NRM IRP (32.63x)
- IMS NRM IRP (32.73x)
- EPC NRM IRP (32.75x)

3GPP H(e)NS NRM IRPs

- HNS NRM IRP (32.77x)
- HeNS NRM IRP (32.78x)

Supporting NRM IRPs

- Inventory Management NRM IRP (32.69x)
- Transport Network NRM IRP (32.71x)
- Repeater NRM IRP (32.72x)
- Signalling Transport NW IF NRM IRP (32.74x)

Generic NRM IRP (32.62x)

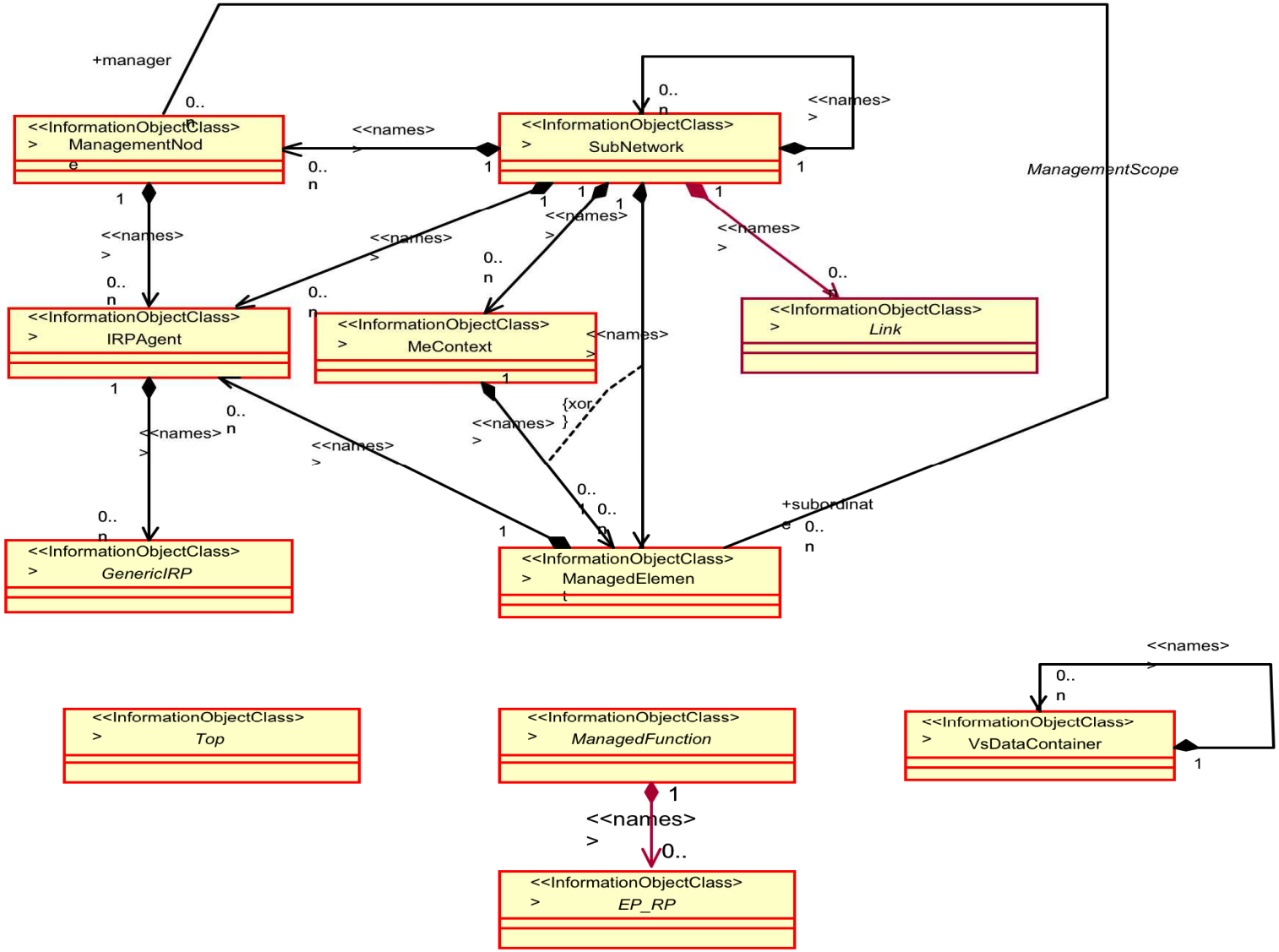
Purpose

- The Generic Network Resources IRP main purpose is to define a generic Network Resource Model that constitutes a base from which other (more specialized) 3GPP and 3GPP-based resource models can inherit or have associations with

What's new in Rel-9

- Unchanged from Rel-8

Generic NRM IRP Capabilities

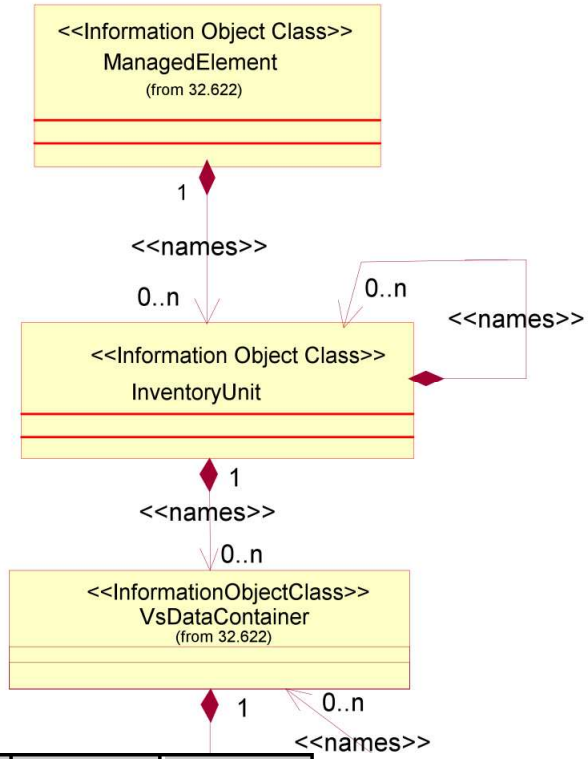


Inventory NRM IRP (32.69x)

- Purpose
  - The Inventory NRM IRP provides definitions for the standardized set of inventory information of 3GPP managed elements

- What's new in Rel-9
  - Unchanged from Rel-8

Inventory NRM IRP Capabilities



Attribute Name	Support Qualifier	Read Qualifier	Write Qualifier
inventoryUnitId	M	M	-
inventoryUnitType	M	M	-
vendorUnitFamilyType	O	M	-
vendorUnitTypeNumber	O	M	-
versionNumber	O	M	-
vendorName	M	M	-
serialNumber	O	M	-
dateOfManufacture	O	M	-
dateOfLastService	O	M	-
unitPosition	O	M	-
manufacturerData	O	M	-

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Rel-9 Interface IRPs

Common IF IRPs

- Notification IRP (32.30x)
- Generic IRP (32.31x)

Supporting IF IRPs

- Notification Log IRP (32.33x)
- File Transfer IRP (32.34x)
- Communication Surv. IRP (32.35x)
- Entry Point IRP (32.36x)

Other IF IRPs

- Partial Suspension (32.38x)
- Delta synchronization (32.39x)

FM-related IF IRPs

- Alarm IRP (32.111-x)
- AAM IRP (32.12x)
- Test Mgmt IRP (32.32x)

PM-related IF IRPs

- PM IRP (32.41x)
- Trace Mgmt (32.44x)

CM-related IF IRPs

- Basic CM IRP (32.60x)
- Bulk CM IRP (32.61x)
- Kernel CM IRP (32.66x)

SON-related IF IRPs

- Self-Configuration IRP (32.50x)
- Software Mgmt (32.53x)

Alarm IRP (32.111-x)

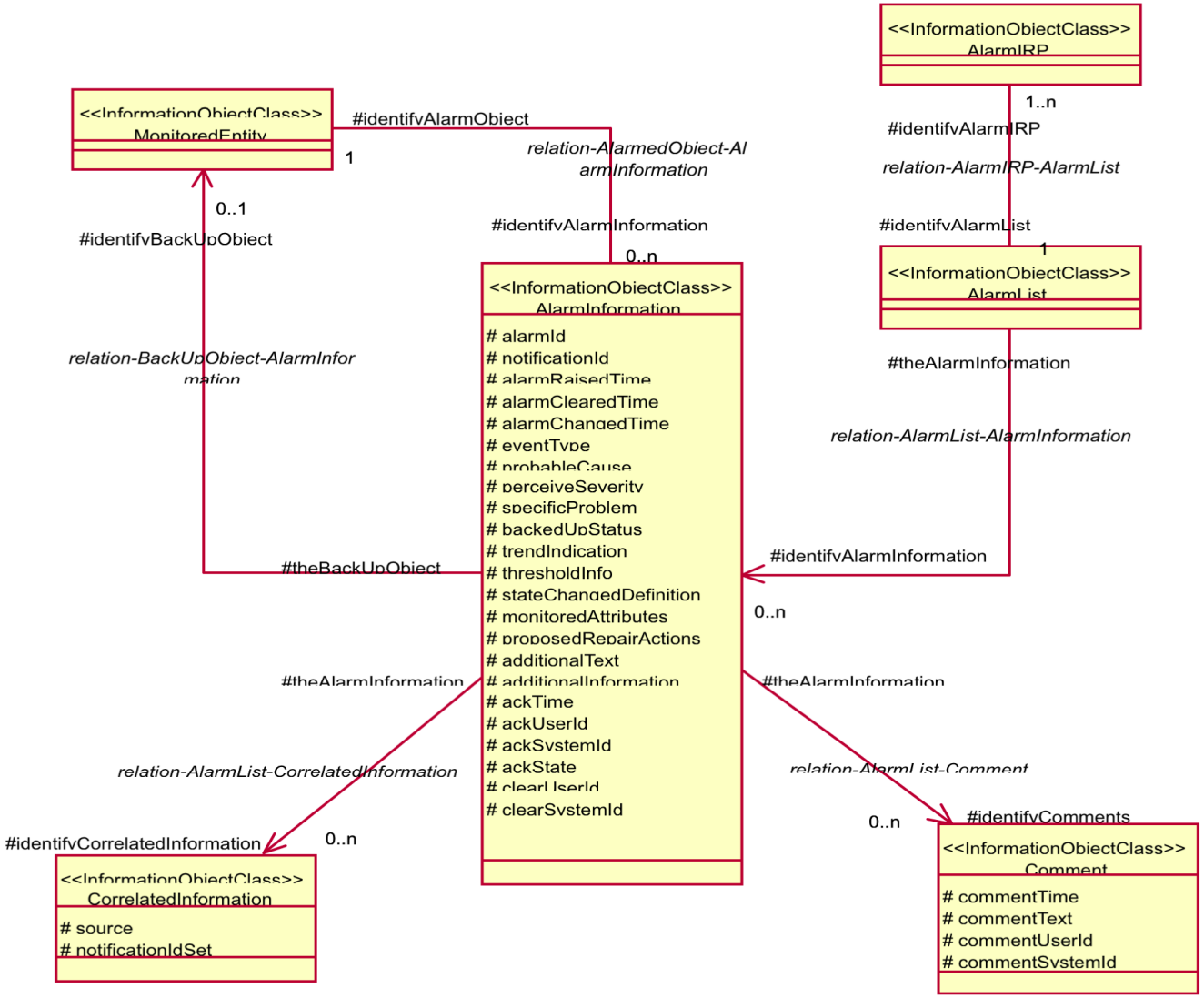
Purpose

- The Alarm (IRP) addresses the alarm surveillance aspects of Fault Management (FM), applied to Itf-N
- It defines alarm semantics and syntax as well as alarm management related operations and notifications

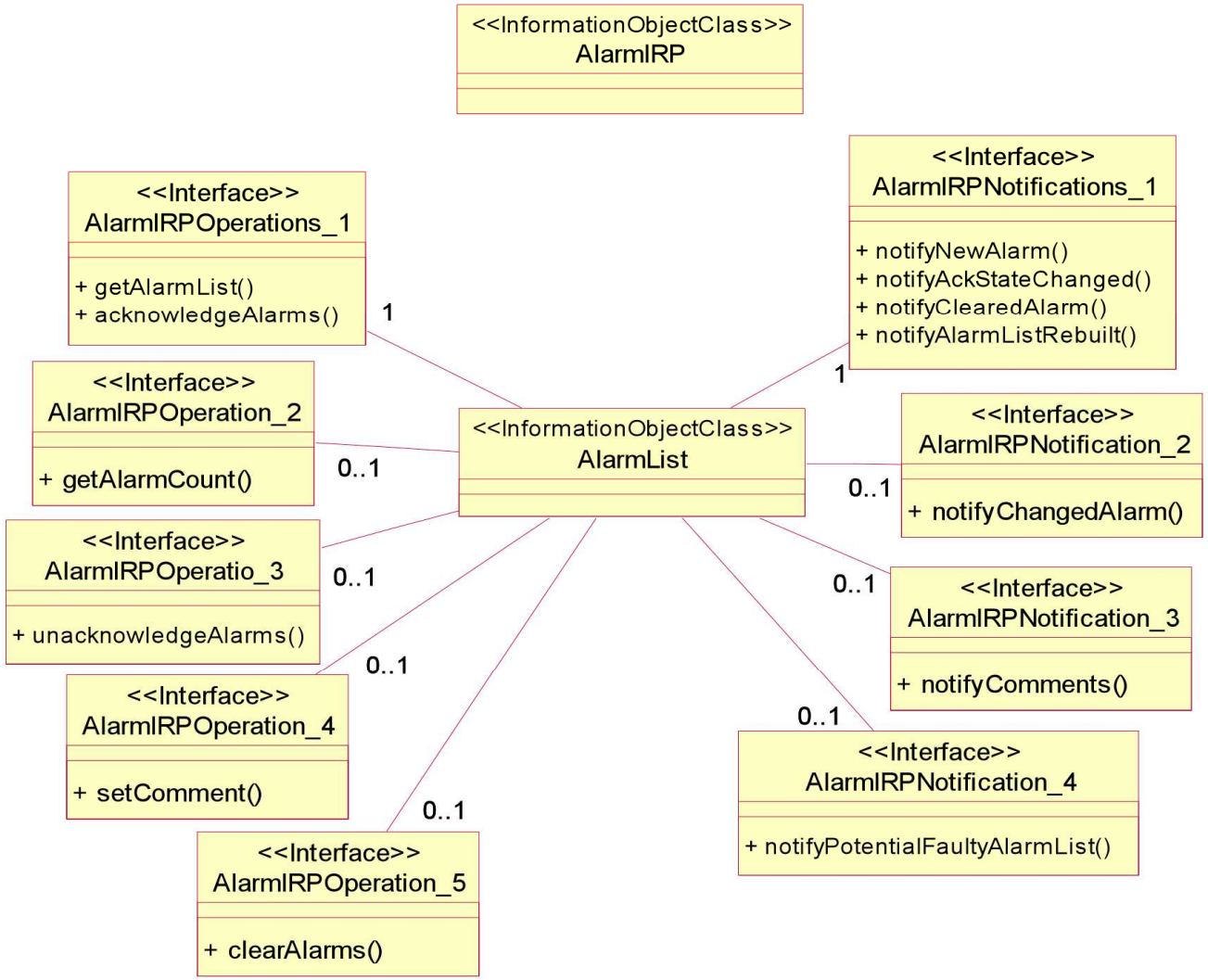
What's new in Rel-9

- Unchanged from Rel-8

Alarm IRP Capabilities



Alarm IRP Capabilities

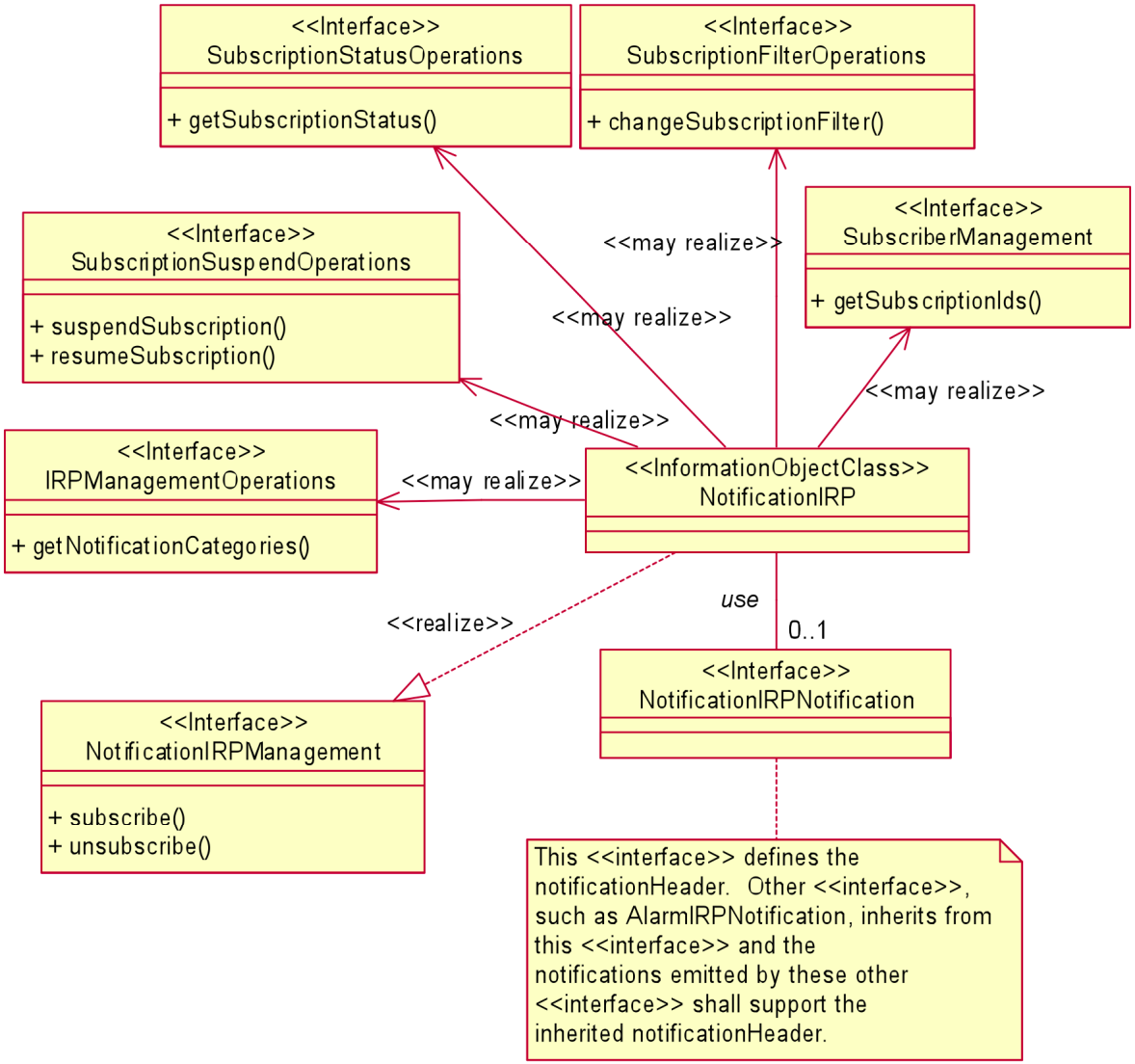


Notification IRP (32.30x)

- Purpose
  - The purpose of the Notification IRP is to define an interface through which an IRPManager can subscribe to an IRPAgent for receiving notifications, manage these subscriptions, and optionally set filters

- What's new in Rel-9
  - Unchanged from Rel-8

Notification IRP Capabilities



Generic IRP (32.31x)

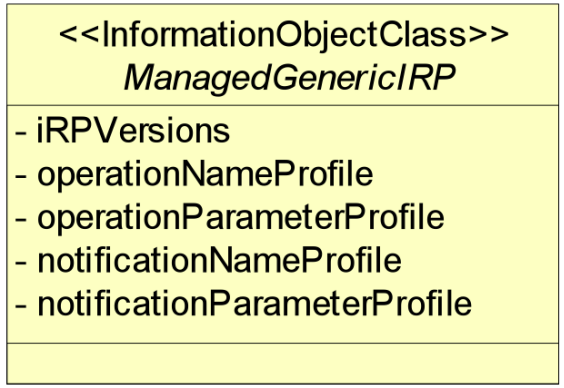
Purpose

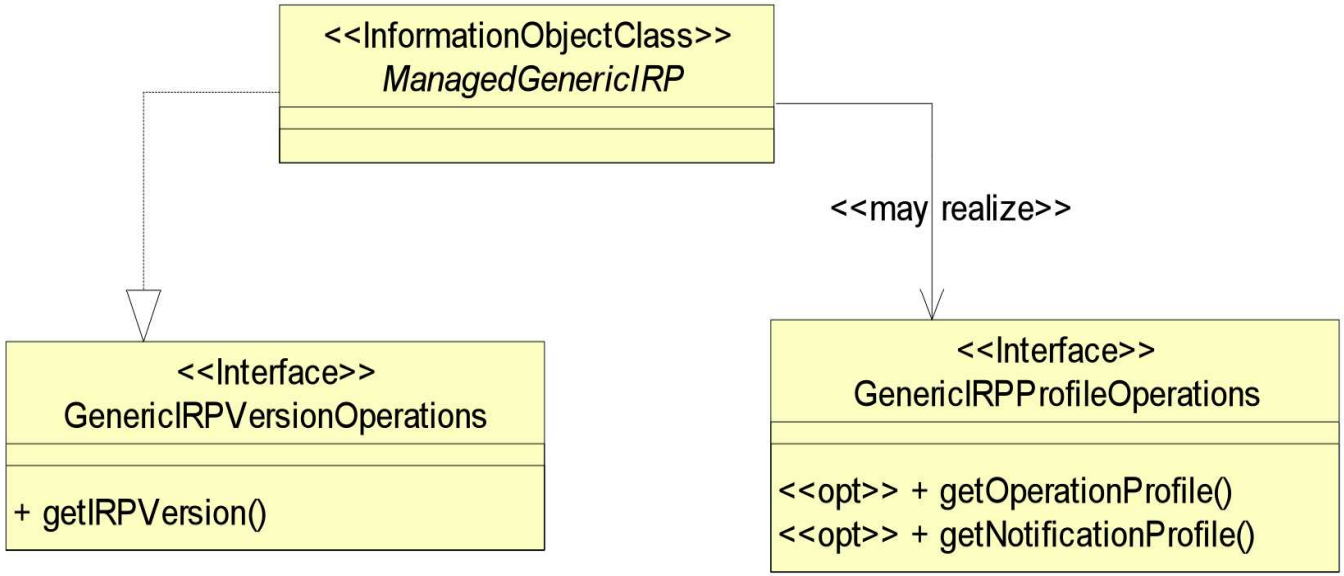
- This IRP defines common services supported by all IRPs such as Alarm IRP
- With this common service supported by all IRPs, an IRPManager can retrieve the profile of operations and notifications supported by a given IRP name-contained by an IRPAgent
- An IRPManager can also retrieve the IRP Versions supported by a given IRP

What's new in Rel-9

- Unchanged from Rel-8

Generic IRP Capabilities





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Rel-8 SON

- New TS 32.500 Self Organizing Networks (SON) Concepts & Requirements
- Self-establishment of eNBs, including automated Software Management
  - New TS series 32.50x Self-Configuration of Network Elements Integration Reference Point (IRP)
  - New TS series 32.53x Software Management Integration Reference Point (IRP)
- SON Automatic Neighbour Relations (ANR) List Management
  - New TS 32.511 Automatic Neighbour Relation (ANR) management; Concepts and requirements
  - Impacts on TS series 32.76x Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Network Resource Model (NRM) Integration Reference Point (IRP)

Rel-9 SON

- Self-optimization
  - New IRP SON Policy NRM IRP in TS series 32.52x
- Automatic Radio Network Configuration Data Preparation
  - Update of TS series 32.50x Self-Configuration of Network Elements IRP
- Study on Energy Saving Management (ESM)
  - TR 32.826 was approved by SA#47 in March 2010
  - Basis as the normative work in Rel-10

Rel-10 SON

- Self-optimization
  - Use cases interference control, capacity and coverage optimization, RACH optimization
  - Coordination of various self-optimization operations
  - Coordination of self-optimization with other SON functions
- Self-healing
  - Use cases cell outage compensation, self-recovery of NE software, etc
  - Reduction of manual interventions by automatic corrective actions
- Energy saving
  - Use cases eNodeB overlaid, carrier restricted, capacity limited network
  - Management and monitoring of energy saving function
  - Evaluation of the impact on the network and service quality

Topics

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Rel-9 OAM&P Work Items (1)

NIM	Software Management for Network Elements
NIM	Service Oriented Architecture (SOA) for IRP
NIM	IRP SOAP Solution Sets
SON	SON Self-Optimization
SON	Automatic Radio Network Configuration Data Preparation
HNB	3G Home NodeB and LTE Home eNodeB OAM&P Type 1 Interface
HNB	3G Home NodeB and LTE Home eNodeB OAM&P Type 2 Interface
HNB	3G Home NodeB Gateway and LTE Home eNodeB Gateway OAM&P

Rel-9 OAM&P Work Items (2)

PM	Enhancement of E-UTRAN Performance Measurements
PM	Enhancement of EPC Performance Measurements
PM	Enhancement of UTRAN Performance Measurements
SUM	Subscription Management (SuM) evolution
UDC	UDC Common Baseline Information Model
UDC	UDC Framework for Model Handling and Management
SI	Study on Energy Savings Management
SI	Study on Integration of Device Management Information with Itf-N
SI	Study of System Maintenance over Itf-N

Rel-10 OAM&P Work Items (1)

NIM	OAM&P for LIPA_SIPTO
NIM	Common RAT Network Resource Model
NIM	IRP Solution Set Specification Organization Improvements
NIM	Service Oriented Architecture (SOA) for IRP continuation
NIM	IRP Overview, Profiles, Usage Guide
PM	Key Performance Indicators (KPIs) for IMS
PM	Key Performance Indicators (KPIs) for EPC
PM	Management of UE based network performance measurements

Rel-10 OAM&P Work Items (2)

PM	3G HNB and LTE HeNB Subsystem performance measurements
SON	SON Self-optimization management continuation
SON	SON Self-healing management
SON	OAM aspects of Energy Saving in Radio Networks
SUM	Subscription Management (SuM) evolution

Rel-10 OAM&P Work Items (3)

SI	Study on Alignment of 3GPP Generic NRM IRP and TMF Shared Information Data (SID) model
SI	Study on Harmonization of 3GPP Alarm IRP and TMF Interface Program (TIP) Fault Management
SI	Study on version handling
SI	Study of Alarm correlation and alarm root cause analysis
SI	Study Item for PM harmonization
SI	Study on Management of Converging Networks
SI	Study on version handling