Technical Specification Group Services and System Aspects **TSGS#18(02)0727**
Meeting #18, New Orleans, USA, 9-12 December 2002

Source:	**SA5 (Telecom Management)**
Title:	**Rel 5 CR 32.102 (Telecommunication management; Architecture) : Updates and corrections to IRPs Introduction**
Document for:	**Approval**
Agenda Item:	**7.5.3**

Doc-1st-	Spec	CR	R	Phase	Subject	Cat	Version	Doc-2nd-	Workitem
SP-020727	32.102	025	-	Rel-5	Updates and corrections to Integration Reference Points (IRPs) Introduction	F	5.1.0	S5-022328	OAM-AR

3GPP TSG-SA5 (Telecom Management) **S5-022328**
Meeting #31, Atlanta, GA, USA 7 - 11 October 2002

CR-Form-v7

CHANGE REQUEST

⌘ **32.102** CR **025** ⌘rev **-** ⌘ Current version: **5.1.0** ⌘

For HELP on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network **X** Core Network **X**

Title: ⌘	Updates and corrections to Integration Reference Points (IRPs) Introduction	
Source: ⌘	SA5	
Work item code: ⌘	OAM-AR	*Date:* ⌘ 22/11/2002

Category: ⌘ **F**	*Release:* ⌘ Rel-5
Use one of the following categories: **F** (correction) **A** (corresponds to a correction in an earlier release) **B** (addition of feature), **C** (functional modification of feature) **D** (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	*Use one of the following releases:* 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change: ⌘	The general introductory material on IRPs requires updating to be consistent with the detailed IRPs that now exist.
Summary of change: ⌘	1. Addition of "IRP Components Figure" 2. Addition of "IRP Specificationa Approach" section and figure 3. Updating of existing Figure 10.1 "IRPs for application Integration" to align with 32.101 and TMF Telecom Operations Map.
Consequences if not approved: ⌘	IRP introductory material will be out of date and misleading to the reader.

Clauses affected: ⌘	10.1, 10.1.1 (new), 10.3

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

10　　Integration Reference Points (IRPs)

10.1　　General

Relating to the OSI functional areas "FCAPS", IRPs are here introduced addressing parts of "FCPS" – Fault, Configuration, Performance, and Security management. Comparing with TMF TOM (Telecom Operations Map) [9], the introduced IRPs address process interfaces at the EML-NML (Element Management Layer – Network Management Layer) boundary. In the 3GPP/SA5 context, this iscan also be applied to the Itf-N between EM-NM and NE-NM.

The three cornerstones of the IRP concept are:

- **Top-down, process-driven modelling approach**
  The purpose of each IRP is automation of one specific task, related to TMF TOM. This allows taking a "one step at a time" approach with a focus on the most important tasks.

- **TechnologyProtocol-independent modelling**
  The creation of an interface technology independent model from the requirements. This is specified in the IRP Information Service.
  Each IRP consists of a protocol-independent model (the IRP Information Service) and several protocol-dependent models (IRP solution sets).

- **Standards--based protocoltechnology--dependent modelling**
  The creation of one or more interface technology dependent models from the technology independent model. This is specified in the IRP Solution Set(s).

Models in different IRP solution sets (CMIP, SNMP, WBEM etc.) will be different as existing standard models of the corresponding protocol environment need to be considered. The means that solution sets largely need to be "hand crafted".
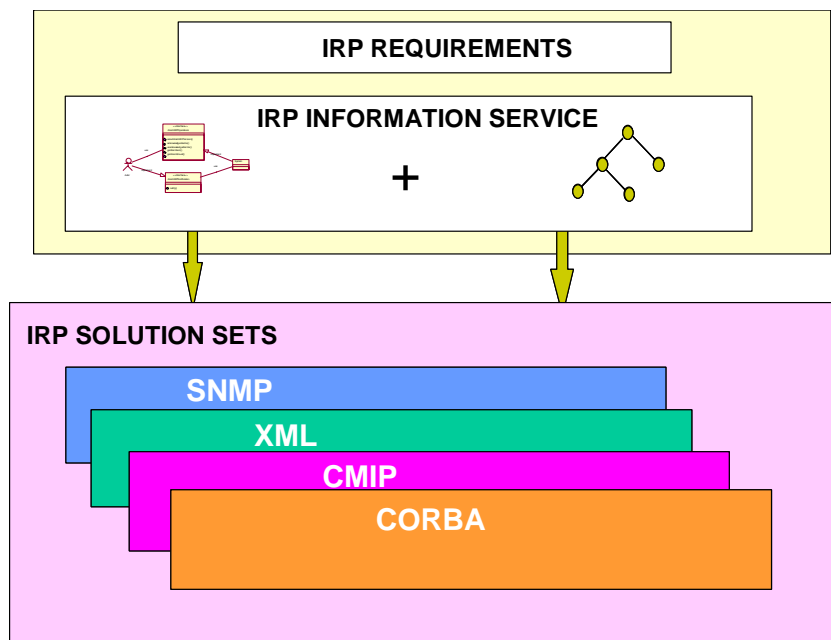
IRP REQUIREMENTS

IRP INFORMATION SERVICE

+

IRP SOLUTION SETS

SNMP

XML

CMIP

CORBA

Figure 10.1: IRP components (with example solution sets).

10.1.1   IRP Specifications Approach

As highlighted in the previous section, IRP interfaces are specified using a 3-level approach: Requirements, IS-level specifications and SS-level.
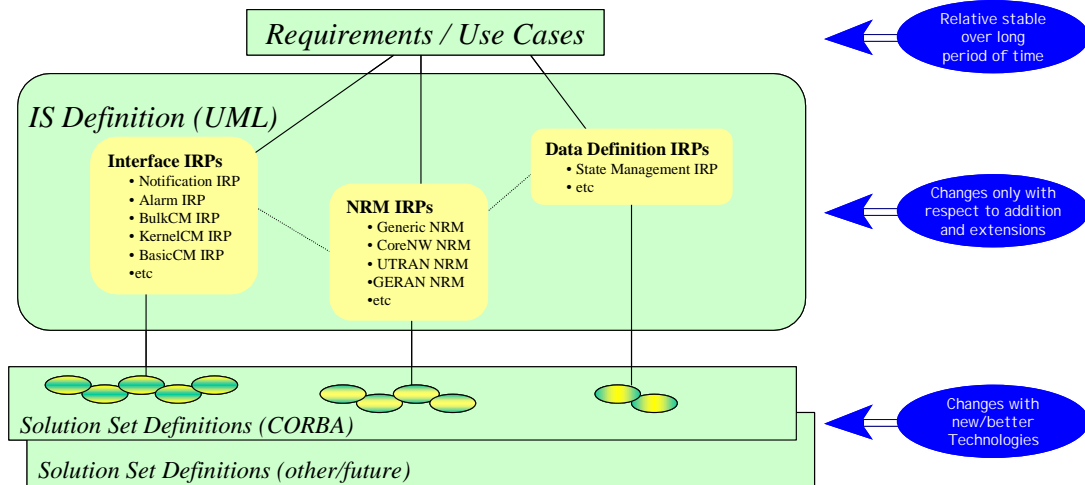

Figure 10.2: IRP Specifications Approach.

The "Requirements-level" intends to provide conceptual and use cases definitions for a specific management interface aspect as well as defining subsequent requirements for this IRP.

The "IS-level" provides the technology independent specification of an IRP. From an IS-level perspective there are three types of IRP IS specifications:

- Interface IRPs – providing the definitions for IRP operations and notifications in a network agnostic manner.

- NRM IRPs – providing the definitions for the Network Resources to be managed through the Itf-N (commonly named "Network Resources IRPs").

- Data Definition IRPs – providing data definitions applicable to specific management aspects to be managed via reusing available Interface IRPs and being applied to NRM IRPs as applicable.

The "SS-level" finally provides the mapping of IS definitions into one or more technology-specific Solution Sets. This concept provides support for multiple interface technologies as applicable on a vendor and/or network type basis and also enables accommodation of future interface technologies – without the need to redefine requirements and IS-level definitions.

10.2   Integration levels

Virtually all types of telecom/datacom networks comprise many different technologies purchased from several different vendors. This implies that the corresponding management solution need to be built by integrating product-specific applications from different vendors with a number of generic applications that each provide some aspect of multi-vendor and/or multi-technology support. A complete management solution is thus composed of several independent applications.

The following levels of integration are defined:

- **Screen Integration:** Each application provides its own specific Graphical User Interface (GUI) that need to be accessible from a single, unified screen (a common desktop). A seamless integration between the various GUIs is then required. Screen Integration is not specified in the present document.

- **Application Integration:** Applications need to interwork, on a machine-machine basis, in order to automate various end-to-end processes of a communication provider.

10.2.1 Application integration

Interfaces related to application integration can be divided in the following three categories:

- **High-level generic interfaces** between generic applications on the network and service management layers. The same approach and concepts apply for these as the next category:

- **High-level (technology-independent to the extent possible) interfaces** between product-specific and generic applications are needed in order to automate and streamline frequently occurring tasks applicable to several types of network elements. A top-down approach shall be taken when defining these interfaces, where the main input is (1) business processes of a communication provider, and (2) the types of generic applications that are used to implement the process support. The interfaces need to be stable, open and (preferably) standardised. These IRPs are discussed below under the heading Network Infrastructure IRPs.

- **Detailed (product-specific) interfaces** between product-specific applications and the corresponding network elements are of course also needed. These interfaces are defined using the traditional bottom-up approach, where the actual network infrastructure is modelled. This is the traditional TMN approach to element management. The management information in these interfaces is not further discussed in this document, as it is internal to a specific development organisation and does not need to be open. In fact, by publishing the management information in these interfaces, too much of the internal design may be revealed and it may become impossible to later enhance the systems that are using the interfaces. The management services (operations and notifications) and protocol shall however be open and standardised as long as they are independent of the NRM describing the managed NEs/NRs.

10.3 Network infrastructure IRPs

When providing integrated management solutions for multi-vendor networks, there is a strong requirement that the NEs and the management solutions that go together with them are systems integrateable. ~~It is here proposed that the telecom vendors provide a set of Network Infrastructure IRPs.~~

It should be noted that these IRPs could be provided by either the NE, or the Element Manager (EM) or Sub-Network Manager (SNM) that goes together with the type of NE. There is actually not a clear distinction any more between NE and element management applications, mainly due to the increased processing capacity of the equipment platforms. Embedded Element Managers providing a web user interface is a common example of that.

These IRPs are introduced to ensure interoperability between Product-Specific Applications (PSA) and the Network & System Management Processes of the Network Manager (ref [2] & [9])~~types of generic applications~~ shown in the figure below. These IRPs are considered to cover the most basic needs of task automation.

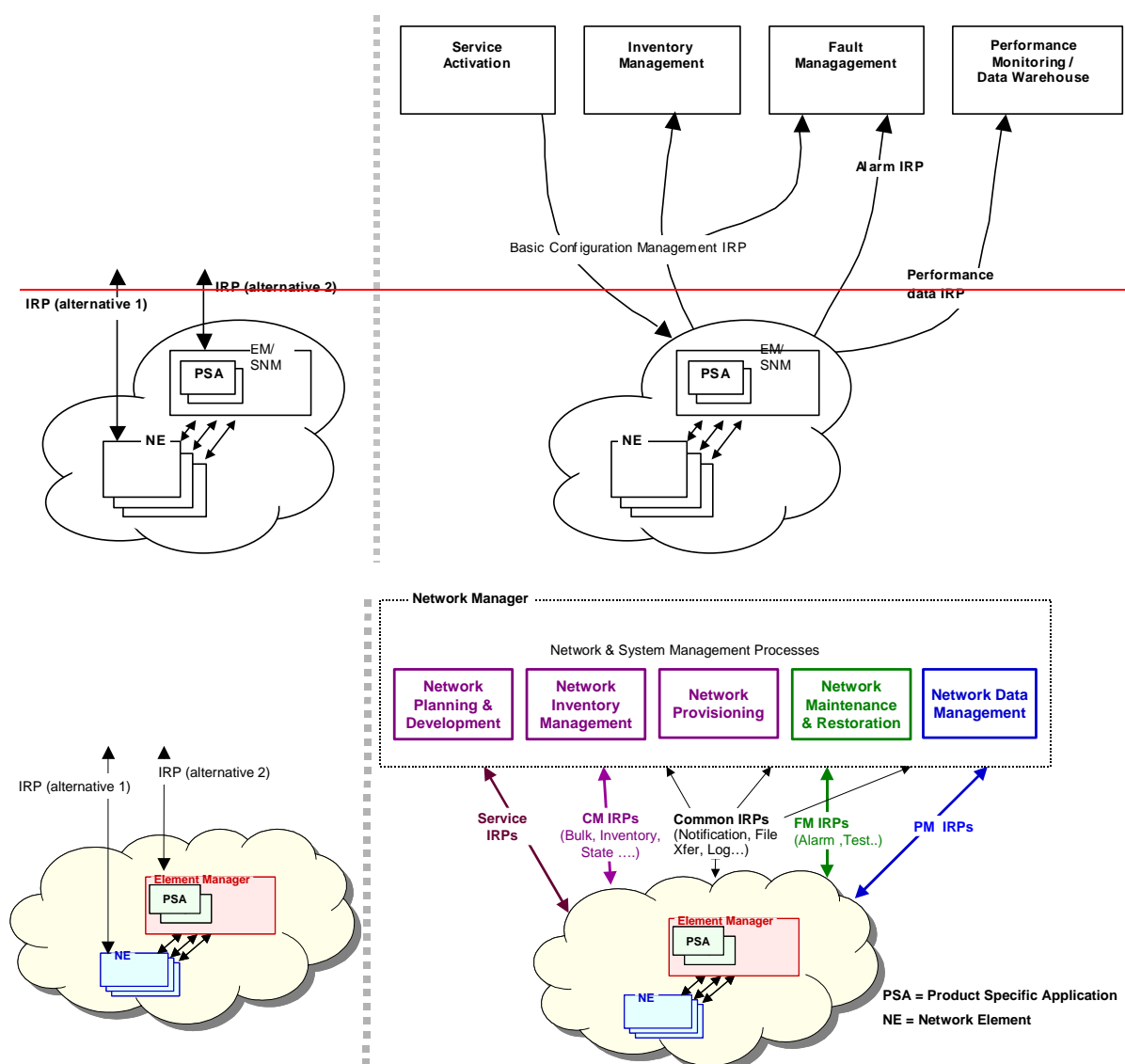**Figure 10.3~~1~~: IRPs for application integration**

The IRPs presented in figure 10.3~~1~~ are just an example and do not reflect the exact set of IRPs defined by the 3GPP.

Taking one of the Common IRPs as an example, the Network & System Management Processes have similar need to receive notifications from various PSAs ~~Many IRPs have similar needs to use notifications~~. The corresponding service is formalised as a *Notification IRP*.
It specifies: firstly, an interface through which subscriptions to different types of notifications can be set up (or cancelled), and secondly, common attributes for all notifications.

Further, applying a common *Name Convention for Managed Objects* is useful for co-operating applications that require identical interpretation of names assigned to network resources under management.