ETSI TS 132 415 V9.0.0 (2010-01)

Technical Specification

**Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Performance Management (PM)
Integration Reference Point (IRP);
eXtensible Markup Language (XML) definitions
(3GPP TS 32.415 version 9.0.0 Release 9)**

Reference
RTS/TSGS-0532415v900

Keywords
GSM, LTE, UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or
perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF).
In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive
within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.
Information on the current status of this and other ETSI documents is available at
http://portal.etsi.org/tb/status/status.asp

If you find errors in the present document, please send your comment to one of the following services:
http://portal.etsi.org/chaircor/ETSI_support.asp

Copyright Notification

ETSI

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

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

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp.

Contents

Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

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:

32.411: "Performance Management (PM) Integration Reference Point (IRP): Requirements"

32.412: "Performance Management (PM) Integration Reference Point (IRP): Information Service (IS)"

32.413: "Performance Management (PM) Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)"

32.415 "Performance Management (PM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions"

32.417: "Performance Management (PM) Integration Reference Point (IRP): SOAP Solution Set (SS)"

The present document is part of a set of TSs which describes the requirements and information model necessary for the Telecommunication Management (TM) of 3G systems. The TM principles and TM architecture are specified in 3GPP TS 32.101 [1] and 3GPP TS 32.102 [2].

A 3G system is composed of a multitude of Network Elements (NE) of various types and, typically, different vendors, which inter-operate in a co-ordinated manner in order to satisfy the network users' communication requirements. Any evaluation of PLMN-system behaviour will require performance data collected and recorded by its NEs according to a schedule established by the EM.

This aspect of the management environment is termed Performance Management. The purpose of any Performance Management activity is to collect performance related data, which can be used to locate potential problems in the network.

1   Scope

The present document specifies the XML definitions for the Performance Management (PM) Integration Reference Point (IRP) as it applies to Itf-N, in accordance with PM IRP IS definitions in 3GPP TS 32.412 [3], for usage with the SOAP Solution Set [6] as well as Notification Log IRP XML definitions in 3GPP TS 32.335 [4].

This specification is related to 3GPP TS 32.412 V9.0.X.

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 32.412: "Performance Management (PM) Integration Reference Point (IRP): Information Service (IS)".

[4]   3GPP TS 32.335: "Telecommunication management; Notification Log (NL) Integration Reference Point (IRP): eXtensible Markup Language (XML) solution definitions".

[5]   3GPP TS 32.331: "Telecommunication management; Notification Log (NL) Integration Reference Point (IRP): Requirements".

[6]   3GPP TS 32.417: "Performance Management (PM) Integration Reference Point (IRP): SOAP Solution Set (SS)".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], and 3GPP TS 32.331 [5] apply.

3.2   Abbreviations

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

IRP	Integration Reference Point
IS	Information Service
NL	Notification Log
PM	Performance Management
PMIRP	Performance Management Integration Reference Point
XML	eXtensible Markup Language

4 PM IRP XML Definitions

4.1 PM IRP notifications XML definition structure

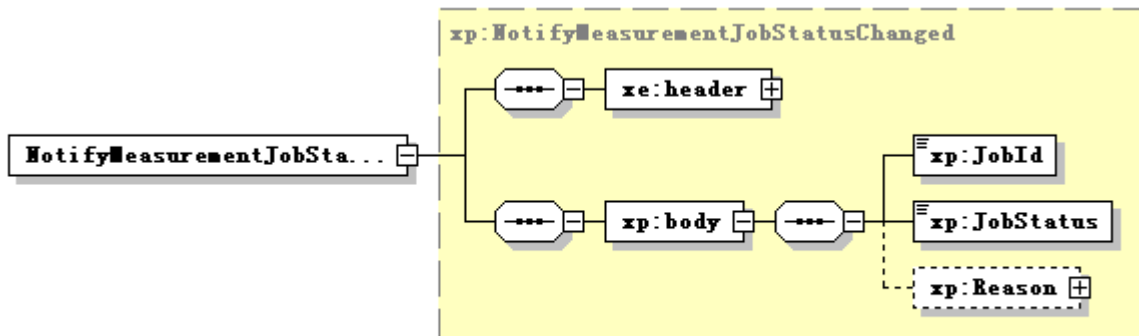This section provides XML definitions of PM IRP notifications as defined in 3GPP TS 32.412 [3].
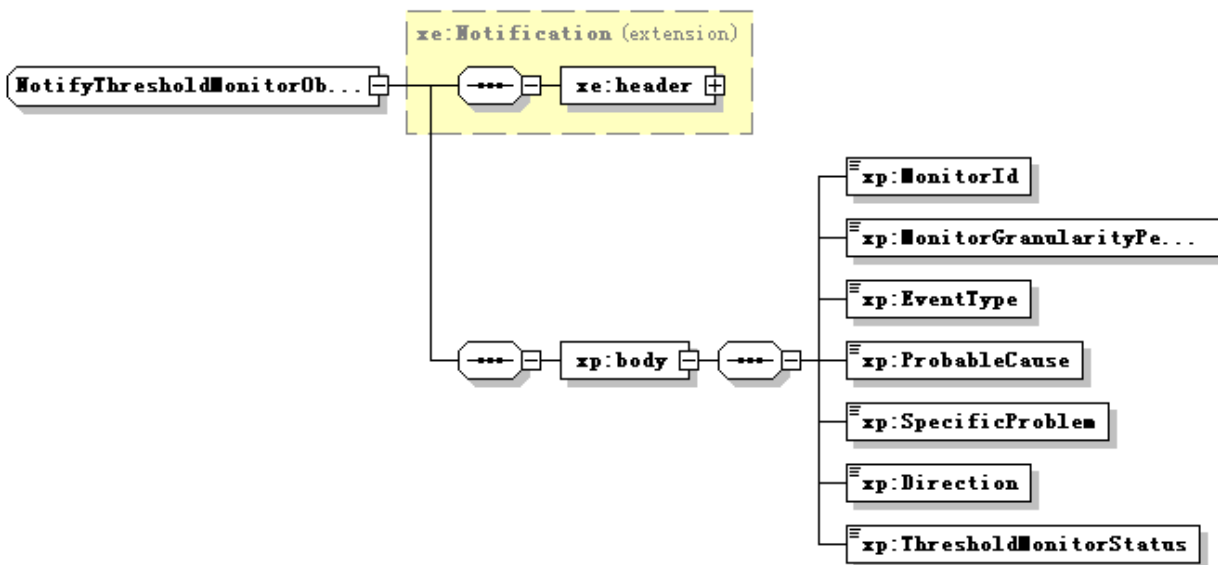
Figure 4.1.1

Figure 4.1.2

Figure 4.1.3

Figure 4.1.4

4.2 PM IRP XML Schema for notifications

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
    3GPP TS 32.415 PMIRP Notification XML Schema
    pMIRPNotif.xsd
-->
<schema xmlns:xp="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPNotif"
xmlns:xe="http://www.3gpp.org/ftp/specs/archive/32_series/32.305#notification"
xmlns:xai="http://www.3gpp.org/ftp/specs/archive/32_series/32.111-5#alarmIRPIOCs"
xmlns:xpi="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPIOCs"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPNotif"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.305#notification"/>
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPIOCs"/>
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.111-5#alarmIRPIOCs"/>
    <simpleType name="QoSEventType">
        <restriction base="xai:EventType">
            <enumeration value="Quality Of Service Alarm"/>
        </restriction>
    </simpleType>
    <complexType name="NotifyMeasurementJobStatusChanged">
        <complexContent>
            <extension base="xe:Notification">
                <sequence>
                    <element name="body">
                        <complexType>
                            <sequence>
                                <element name="JobId" type="xpi:JobId"/>
                                <element name="JobStatus" type="xpi:JobStatus"/>
                                <element name="Reason" type="xpi:JobStatusChangedReasons"
minOccurs="0"/>
                            </sequence>
                        </complexType>
                    </element>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
    <complexType name="NotifyThresholdMonitorObjectCreation">
        <complexContent>
            <extension base="xe:Notification">
                <sequence>
                    <element name="body">
                        <complexType>
                            <sequence>
                                <element name="MonitorId" type="xpi:MonitorId"/>
                                <element name="MonitorGranularityPeriod"
type="xpi:MonitorGranularityPeriod"/>
                                <element name="EventType" type="xp:QoSEventType"/>
                                <element name="ProbableCause" type="xpi:TcProbableCause"/>
                                <element name="SpecificProblem" type="xpi:SpecificProblem"/>
                                <element name="Direction" type="xpi:Direction"/>
                                <element name="ThresholdMonitorStatus"
type="xpi:ThresholdMonitorStatus"/>
                            </sequence>
                        </complexType>
                    </element>
                </sequence>
            </extension>
        </complexContent>
    </complexType>
    <complexType name="NotifyThresholdMonitorObjectDeletion">
        <complexContent>
            <extension base="xe:Notification">
                <sequence>
                    <element name="body">
                        <complexType>
                            <sequence>
                                <element name="MonitorId" type="xpi:MonitorId"/>
                            </sequence>
                        </complexType>
                    </element>
                </sequence>
            </extension>
```

```
                </complexContent>
            </complexType>
            <complexType name="NotifyThresholdMonitorStatusChanged">
                <complexContent>
                    <extension base="xe:Notification">
                        <sequence>
                            <element name="body">
                                <complexType>
                                    <sequence>
                                        <element name="MonitorId" type="xpi:MonitorId"/>
                                        <element name="MonitorStatus" type="xpi:ThresholdMonitorStatus"/>
                                        <element name="Reason" type="xpi:MonitorStatusChangedReasons"
minOccurs="0"/>
                                    </sequence>
                                </complexType>
                            </element>
                        </sequence>
                    </extension>
                </complexContent>
            </complexType>
            <element name="NotifyMeasurementJobStatusChanged" type="xp:NotifyMeasurementJobStatusChanged"/>
            <element name="NotifyThresholdMonitorObjectCreation"
type="xp:NotifyThresholdMonitorObjectCreation"/>
            <element name="NotifyThresholdMonitorObjectDeletion"
type="xp:NotifyThresholdMonitorObjectDeletion"/>
            <element name="NotifyThresholdMonitorStatusChanged"
type="xp:NotifyThresholdMonitorStatusChanged"/>
        </schema>
```
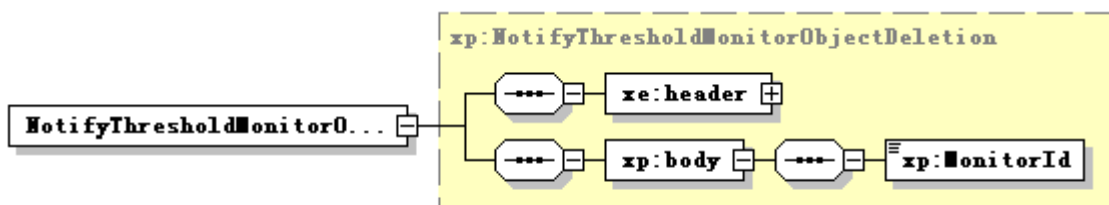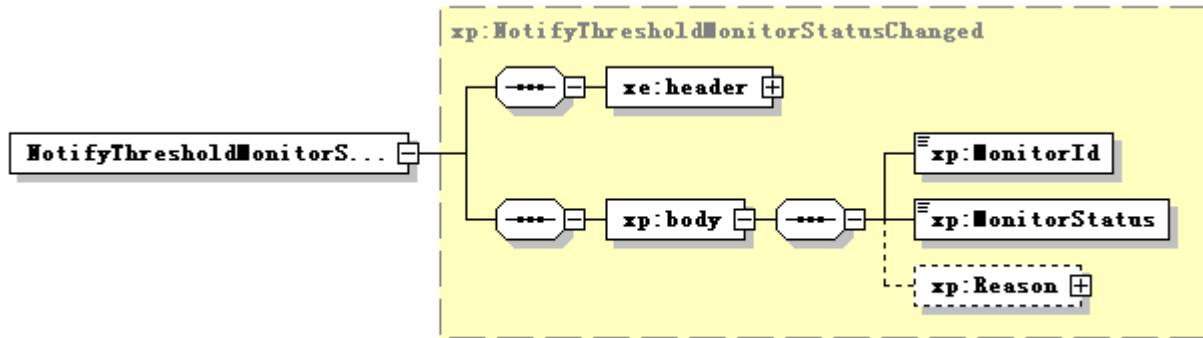
4.3   PM IRP XML Schema for IOCs

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
    3GPP TS 32.415 Performance Management IRP IOC XML Schema
    pMIRPIOCs.xsd
-->
<schema xmlns:xpi="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPIOCs"
xmlns:xe="http://www.3gpp.org/ftp/specs/archive/32_series/32.305#notification"
xmlns:xai="http://www.3gpp.org/ftp/specs/archive/32_series/32.111-5#alarmIRPIOCs"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.415#pMIRPIOCs"
elementFormDefault="qualified" attributeFormDefault="unqualified">
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.305#notification"/>
    <import namespace="http://www.3gpp.org/ftp/specs/archive/32_series/32.111-5#alarmIRPIOCs"/>
    <!-- Type definitions -->
    <simpleType name="JobId">
        <restriction base="string">
            <minLength value="1"/>
        </restriction>
    </simpleType>
    <simpleType name="JobStatus">
        <restriction base="string">
            <enumeration value="Scheduled"/>
            <enumeration value="Active"/>
            <enumeration value="Suspended"/>
            <enumeration value="Stopped"/>
        </restriction>
    </simpleType>
    <simpleType name="JobStatusChangedReason">
        <restriction base="string">
            <enumeration value="failToReadMeasurementTypesForExtendedProlongPeriod"/>
            <enumeration value="internalProblem"/>
            <enumeration value="stopMeasurementJob"/>
            <enumeration value="stopTimeReached"/>
            <enumeration value="resumeMeasurementJob"/>
            <enumeration value="suspendMeasurementJob"/>
            <enumeration value="startTimeReached"/>
            <enumeration value="suspendMeasurementJobBySystem"/>
        </restriction>
    </simpleType>
    <complexType name="JobStatusChangedReasons">
        <sequence>
            <element name="Reason" type="xpi:JobStatusChangedReason" maxOccurs="unbounded"/>
        </sequence>
    </complexType>
    <simpleType name="MonitorStatusChangedReason">
```

```
            <restriction base="string">
                <enumeration value="ResumeThresholdMonitor"/>
                <enumeration value="SuspendThresholdMonitor"/>
            </restriction>
        </simpleType>
        <complexType name="MonitorStatusChangedReasons">
            <sequence>
                <element name="Reason" type="xpi:MonitorStatusChangedReason" maxOccurs="unbounded"/>
            </sequence>
        </complexType>
        <simpleType name="MonitorId">
            <restriction base="string">
                <minLength value="1"/>
            </restriction>
        </simpleType>
        <complexType name="DailyScheduling">
            <sequence minOccurs="0">
                <element name="intervalStart" type="time"/>
                <element name="intervalEnd" type="time"/>
            </sequence>
            <!-- This element type is allowed to be empty -->
        </complexType>
        <simpleType name="WeekDay">
            <restriction base="string">
                <enumeration value="Monday"/>
                <enumeration value="Tuesday"/>
                <enumeration value="Wednesday"/>
                <enumeration value="Thursday"/>
                <enumeration value="Friday"/>
                <enumeration value="Saturday"/>
                <enumeration value="Sunday"/>
            </restriction>
        </simpleType>
        <complexType name="WeekDays">
            <sequence>
                <element name="day" type="xpi:WeekDay" maxOccurs="7"/>
            </sequence>
        </complexType>
        <complexType name="WeeklyScheduling">
            <sequence>
                <element name="days" type="xpi:WeekDays" minOccurs="0"/>
                <element name="dailyScheduling" type="xpi:DailyScheduling" minOccurs="0"/>
            </sequence>
        </complexType>
        <simpleType name="GranularityPeriod">
            <restriction base="string">
                <enumeration value="5 Minutes"/>
                <enumeration value="15 Minutes"/>
                <enumeration value="30 Minutes"/>
                <enumeration value="1 Hour"/>
                <enumeration value="12 Hours"/>
                <enumeration value="24 Hours"/>
            </restriction>
        </simpleType>
        <simpleType name="MonitorGranularityPeriod">
            <restriction base="xpi:GranularityPeriod"/>
        </simpleType>
        <simpleType name="JobGranularityPeriod">
            <restriction base="xpi:GranularityPeriod"/>
        </simpleType>
        <simpleType name="JobReportingPeriod">
            <restriction base="positiveInteger"/>
            <!-- The legal value is in number of minutes and otherwise according to jobReportingPeriod
of 3GPP TS 32.412 -->
        </simpleType>
        <simpleType name="JobStartTime">
            <restriction base="dateTime"/>
        </simpleType>
        <simpleType name="JobStopTime">
            <restriction base="dateTime"/>
        </simpleType>
        <complexType name="JobSchedule">
            <choice>
                <element name="dailyScheduling" type="xpi:DailyScheduling"/>
                <element name="weeklyScheduling" type="xpi:WeeklyScheduling"/>
            </choice>
        </complexType>
        <simpleType name="JobPriority">
```

```
            <restriction base="string">
                <enumeration value="Low"/>
                <enumeration value="Medium"/>
                <enumeration value="High"/>
            </restriction>
        </simpleType>
        <simpleType name="PrabableCausePM">
            <restriction base="string">
                <enumeration value="Threshold Crossed"/>
            </restriction>
        </simpleType>
        <simpleType name="Direction">
            <restriction base="string">
                <enumeration value="Increasing"/>
                <enumeration value="Decreasing"/>
            </restriction>
        </simpleType>
        <simpleType name="QoSEventType">
            <restriction base="xai:EventType">
                <enumeration value="Quality Of Service Alarm"/>
            </restriction>
        </simpleType>
        <simpleType name="TcProbableCause">
            <restriction base="xai:ProbableCause">
                <enumeration value="Threshold Crossed"/>
            </restriction>
        </simpleType>
        <simpleType name="SpecificProblem">
            <restriction base="string"/>
        </simpleType>
        <simpleType name="ThresholdMonitorStatus">
            <restriction base="string">
                <enumeration value="Active"/>
                <enumeration value="Suspended"/>
            </restriction>
        </simpleType>
        <simpleType name="ThresholdSeverity">
            <restriction base="string">
                <enumeration value="Warning"/>
                <enumeration value="Minor"/>
                <enumeration value="Major"/>
                <enumeration value="Critical"/>
            </restriction>
        </simpleType>
        <!-- Attributes of the MeasurementJob IOC -->
        <element name="jobId" type="xpi:JobId"/>
        <element name="jobGranularityPeriod" type="xpi:JobGranularityPeriod"/>
        <element name="jobReportingPeriod" type="xpi:JobReportingPeriod"/>
        <element name="jobStatus" type="xpi:JobStatus"/>
        <element name="jobPriority" type="xpi:JobPriority"/>
        <!-- Attributes of the JobMeasurementSchedule IOC -->
        <element name="jobStartTime" type="xpi:JobStartTime"/>
        <element name="jobStopTime" type="xpi:JobStopTime"/>
        <element name="jobSchedule" type="xpi:JobSchedule"/>
        <!-- Attributes of the MeasuredAttribute IOC -->
        <element name="measurementTypeName" type="string"/>
        <!-- Attributes of the MeasurementReader IOC -->
        <element name="measurementResultValue" type="anyType"/>
        <element name="probableCause" type="xpi:TcProbableCause"/>
        <element name="specificProblem" type="xpi:SpecificProblem"/>
        <element name="direction" type="xpi:Direction"/>
        <!-- Attributes of the Monitor IOC -->
        <element name="monitorId" type="string"/>
        <element name="monitorGranularityPeriod" type="xpi:GranularityPeriod"/>
        <!-- Attributes of the ThresholdMonitor IOC -->
        <element name="thresholdMonitorStatus" type="xpi:ThresholdMonitorStatus"/>
        <!-- Attributes of the ThresholdLevel IOC -->
        <element name="thresholdValue" type="string"/>
        <element name="thresholdSeverity" type="xpi:ThresholdSeverity"/>
        <element name="hysteresis" type="string"/>
</schema>
```

Annex A (informative):
Void

Annex B (informative): Change history

<table>
<tr><td colspan="9" align="center">Change history</td></tr>
<tr><td>Date</td><td>TSG #</td><td>TSG Doc.</td><td>CR</td><td>Rev</td><td align="center">Subject/Comment</td><td>Cat</td><td>Old</td><td>New</td></tr>
<tr><td>Mar 2007</td><td>SA_35</td><td>SP-070073</td><td>--</td><td>--</td><td>Submitted to TSG SA#35 for Approval</td><td>--</td><td>1.0.0</td><td>7.0.0</td></tr>
<tr><td>Jun 2007</td><td>SA_36</td><td>--</td><td>--</td><td>--</td><td>Deleted reference to CMIP SS, discontinued from R7 onwards.</td><td>--</td><td>7.0.0</td><td>7.0.1</td></tr>
<tr><td>Mar 2009</td><td>SA_43</td><td>SP-090207</td><td>0001</td><td>--</td><td>Create a new XSD for IOCs</td><td>C</td><td>7.0.1</td><td>8.0.0</td></tr>
<tr><td>Dec 2009</td><td>SA_46</td><td>SP-090719</td><td>0002</td><td>--</td><td>Discontinue from Rel-9 onwards the XML schema extraction and storage</td><td>F</td><td>8.0.0</td><td>9.0.0</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

History

Document history		
V9.0.0	January 2010	Publication