

**Agenda Item:** 9.1  
**Source:** Ericsson  
**Title:** Alarm IRP and GUI Launch IRP presentation  
**Document for:** Discussion

This paper (in the attached PowerPoint document) presents an overview, requirements and description of the Alarm IRP (Integration Reference Point) and GUI Launch IRP, in relation to Ericsson's proposal for a new UMTS management framework based on IRPs, made at the last SA5 meeting.

We hope to be able to present this document in the WI-1 Rapporteur Group discussion (agenda item 9.1). It is also related to agenda items 9.2 and 9.5. Finally, it may also be discussed in the Open Session/FM work item discussions the 19<sup>th</sup> July.

## **Presentation**

# **IRP framework proposal for UMTS: Alarm IRP and GUI Launch IRP, requirements and description overview**

**3GPP WG5 meeting #5  
San Diego, CA, 1999-07-20-22**

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## **Introduction**

### **Quick update and summary of IRP concept**

- **Towards our goal to embrace more open technologies - CORBA being one of them - we have developed the concept of Integration Reference Points (IRPs) - enablers for application integration.**
- **IRPs define the point of information exchange and the communication protocol(s) used between management systems/applications and external entities using standard technologies.**

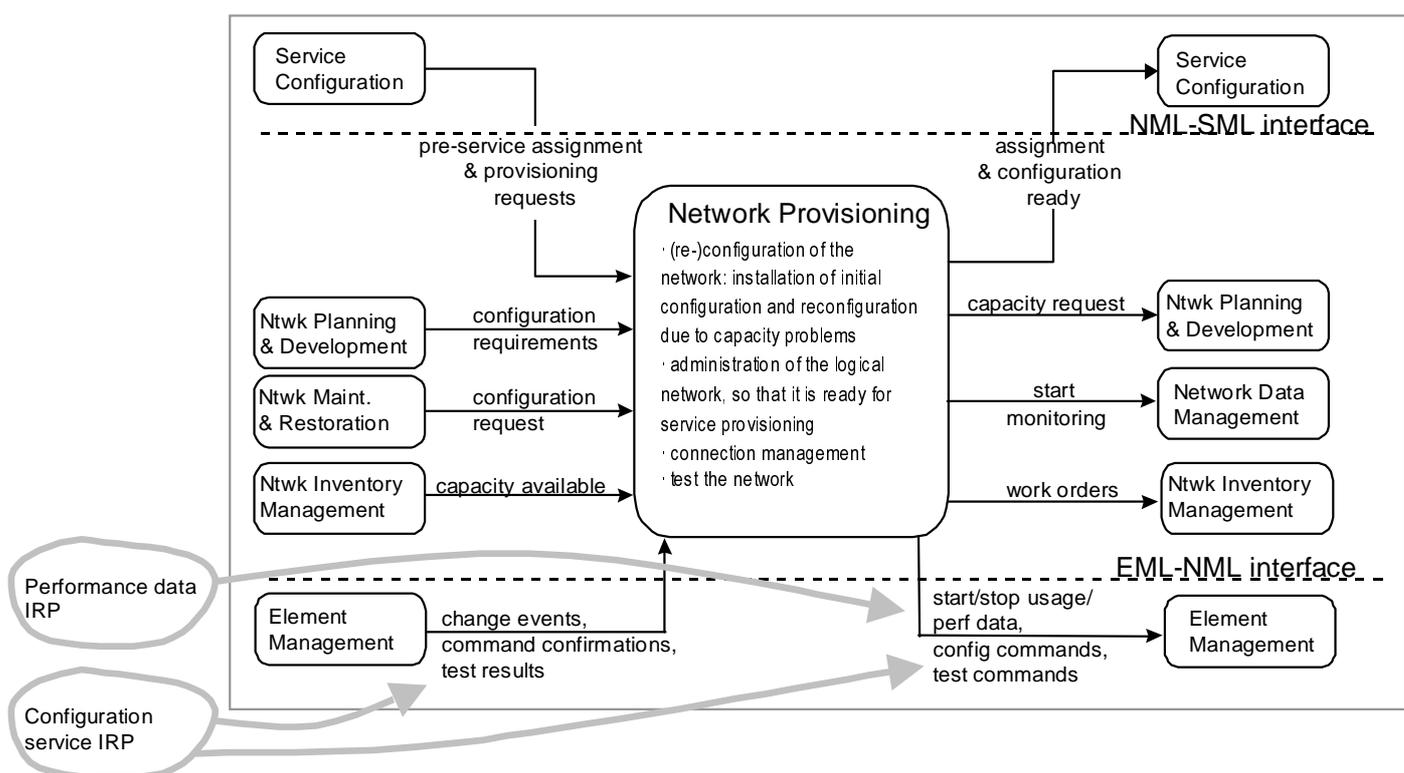
# Introduction

## IRPs - technical overview

- Reuse TMN information models, paradigm and experience plus own/operator experience.
- Follow the trend to focus on information contents of interfaces
  - TMF (NMF), DMTF (CIM), etc.
- Information Model
  - UML + plain English
  - Services + MO schema
- Shift to wide-spread IT (not telecom-specific) standard protocols like CORBA/IIOP, SNMP
- Mapping to TMF Telecom Operations Map processes

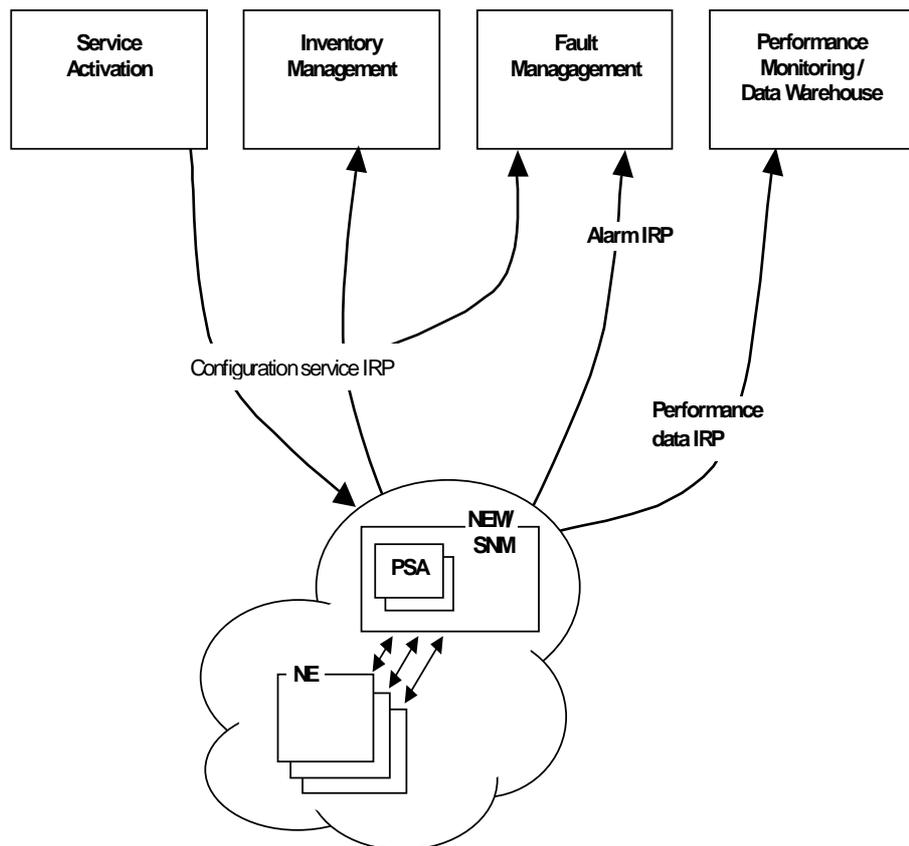
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## Mapping to TMF Telecom Operations Map



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# IRPs for application integration



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## Alarm IRP

### Introduction and overview

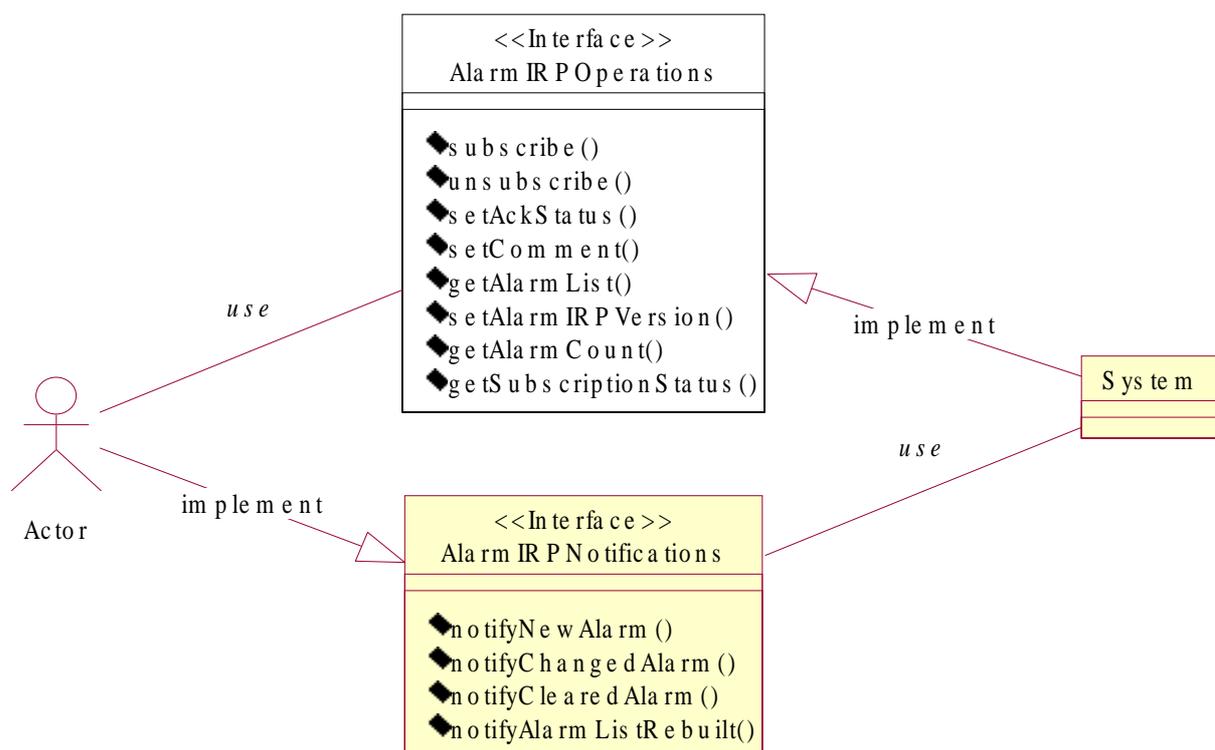
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## Alarm IRP Introduction

- Supports the Alarm Surveillance service component of Fault Management.
- Defines four types of alarm notifications:
  - New alarm
  - Changed alarm
  - Cleared alarm
  - Alarm list rebuilt
- Alarm notification attributes:
  - Attributes and values based on M.3100, X.733, X.736, GSM 12.11
  - Mandatory attr. of X.733 alarm notification supported
  - Added to X.733 alarm notification attributes:
    - Alarm ID, System name
    - Acknowledgement and comments related values added to additional\_info attr.

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## UML model for Alarm IRP interfaces



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## Alarm list and Alarm ID attribute

- **Alarm list:** A list of alarm objects or alarm records whose alarm information is active (i.e., the severity level is not cleared). System maintains the Alarm List.
- **Alarm records hold an identification called alarmId**
- **Notifications notifyNewAlarm, notifyChangedAlarm and notifyClearedAlarm carry alarmId as well. This identifier uniquely identifies the alarm record from all other alarm records in Alarm List.**
- **Alarm ID is used in operations setAckStatus, setComment, notifyChangedAlarm and notifyClearedAlarm.**
- **The structure of alarmId is Solution Set specific.**

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## Matching Criteria

- **ITU-T X.733 [2] specifies a matching criterion to decide if alarm information carried in multiple notifications are related to a specific fault of a specific network resource. Shall be used.**
- **Based on the values of the following attributes:**
  - ManagedObjectInstance
  - EventType
  - ProbableCause
  - SpecificProblems, if present
- **AlarmId attribute may be used as the alternate criterion. Implies that several alarm notifications with the same AlarmId value are considered addressing the same fault.**

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## Alarm Record

- The alarm record contains the following attributes:
  - Alarm Id [M]
  - System Name [M]
  - Managed Object Class [M]
  - Managed Object Instance [M]
  - Event Time [M]
  - Event Type [M]
  - Probable Cause [M]
  - Perceived Severity [M]
  - Specific Problems [O]
  - Correlated Notifications [O]
  - Additional Text [O] (Incl. AckUser, AckTime, Comment)
  - Additional Info [O]

## Alarm Record, cont.

- Encoding rules are specified in various Alarm IRP Solution Sets such as CORBA and SNMP.
- The symbol [Y] indicates those attributes whose value changes would trigger System to invoke `notifyChangedAlarm` notification. At least the value of one attribute marked with [Y] must be different than that carried in the most recent `notifyChangedAlarm` or `notifyNewAlarm` notification of the subject alarm.
- Probable cause: Captures values from M.3100, X.733, X.736 and GSM 12.11. A special p.c. value indicates that vendor specific p.c. value can be found in `specificProblems` attribute.

# Alarm IRP Notifications

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## New Alarm (Mandatory)

- **System notifies the subscribed Actor that a new alarm has been added into the alarm list and that the added alarm satisfies the optional filter constraint expressed in Actor's subscribe operation**
- **Parameters:**
  - **AlarmRecord**
    - Input (M): Contains a copy of the newly added alarm.
  - **NotificationID**
    - Input (O): Identifies this notification from other notifications.

## Changed Alarm (Optional)

- **System notifies the subscribed Actor of state change (e.g. when alarm state is changed to acknowledged) or alarm record attribute value change (e.g., when alarm PerceivedSeverity changes from Critical to Major) in one of the alarms in the Alarm List.**
- **System shall not create a new entry in the Alarm List when an alarm is emitted that matches with an alarm in the Alarm List. In this case, System shall invoke either (1) notifyChangedAlarm or (2) notifyClearedAlarm followed by notifyNewAlarm notification.**
- **The subject alarm satisfies the optional filter constraint expressed in the Actor subscribe operation.**
- **Parameters: Same as for notifyNewAlarm**

## Cleared Alarm (Mandatory)

- **System notifies the subscribed Actor of alarm clearing. The alarm cleared shall no longer be kept in the Alarm List.**
- **Parameters: Same as for notifyNewAlarm**

## Alarm list rebuilt (Mandatory)

- If System rebuilds this list for any reason, System shall notify Actor after the Alarm List is rebuilt.
- The conditions under which System shall rebuild and the means by which System shall rebuild its Alarm List are outside the scope of this IRP.
- Parameters:
  - EventTime:
    - Input (M): Indicates the time when the Alarm List completed its rebuild.
  - NotificationID
    - Input (O): Identifies this notification from other notifications.

## Alarm IRP operations

- The Alarm IRP Operations interface supports:
  - Subscribe to alarms
  - Unsubscribe
  - Set Acknowledgement Status
  - Set Comment
  - Get Alarm Count
  - Synchronization of alarms
  - Checking of subscription status
  - Set Alarm IRP Version

## Subscribe Operation

- The subscribe operation is used by the Actor to set up propagation of alarms from System to Actor
- The Actor provides the actor-ref. to the System
- Actor can optionally provide the filter criteria
- System provides a unique subscription ID for each subscription
- Mandatory

## Unsubscribe Operation

- Actor uses it to cancel subscription
- Actor uses the subscription ID to identify the subscription to be cancelled
- Mandatory

## Set Acknowledgement Status operation

- Actor invokes this operation to acknowledge or unacknowledge one or more alarms.
- “Acknowledge” operation: System records Actor’s identification and the operation time in the fields AckUser and AckTime of the current alarm record.
- “Unacknowledge” operation: System deletes information in AckUser and AckTime.
- Optional

## Set Comment Operation

- Actor invokes it to record comments in the subject alarm record in Alarm List.
- Actor’s comment, together with the commentator identifier, is recorded in attribute AdditionalInfo/comment
- Optional

## Get Alarm Count Operation

- Actor invokes it to find out the volume of alarms of different severities in Alarm List.
- May be useful to invoke before an alarm synchronization.
  
- Optional

## Alarm Synchronization Operation

- Actor can invoke it at anytime, to get all the active (current) alarms from the System Alarm List.
- Only the Actor who asks for it will get the synchronized alarms
- Works independently of normal alarm sending
- System may lose confidence in the integrity of its Alarm List. Under this condition, System shall invoke notifyAlarmListRebuilt notification after it has successfully rebuilt the Alarm List. Subsequently, actor should invoke the Alarm synchronization.
- Mandatory

## Get Subscription Status operation

- The status of a subscription can be checked using this operation i.e. the actor will ask the system to indicate, if it is aware of the subscription between the two.
- Subscription ID is used to identify the subscription for which the status is checked.
- Recommended that Actor invokes this operation periodically or after a period of inactivity. In case Actor of negative confirmation, Actor should assume that System has lost the Actor's reference. In this case, Actor should invoke subscribe operation again.
- Mandatory

## Set Alarm IRP Version operation

- Actor wishes to communicate with System using a particular Solution Set version.
- System shall respond with operation successful in case System supports the requested version.
- System shall respond with operation unsuccessful in case System does not support the requested version. In this case, System shall return with a list of (one or more) version numbers currently supported by System.
- Mandatory

## Alarm loss detection and recovery

- This IRP does not specify methods for Actor to detect alarm loss.
- The use of alarmId to detect alarm loss is an arrangement that could be made between System and Actor. This arrangement is outside the scope of this IRP.

## GUI launch IRP

### Introduction and overview

## Introduction

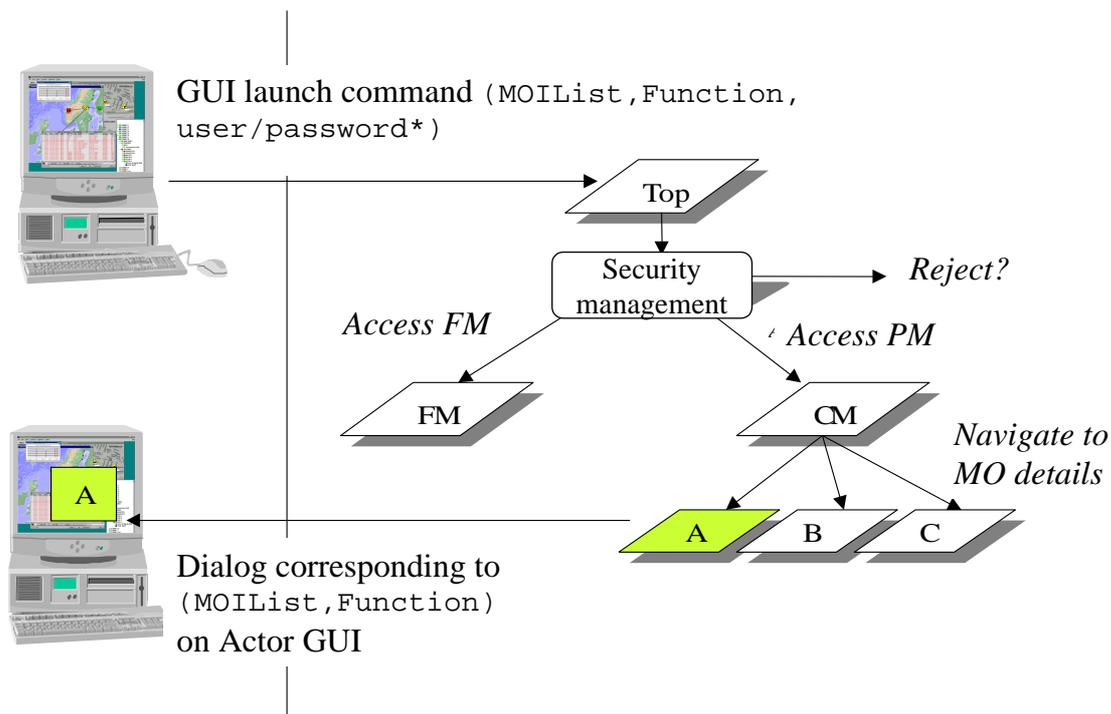
- **Enables quick, low-cost screen integration**
  - Useful for infrequent tasks
- **A complement to application integration**
  - Frequent tasks require automation
- **Many fields of use, e.g. configuration**
- **Technically very simple**
  - Still often not supported today

“Spending enormous amounts to automate everything is as foolish as spending too little on needed automation” - *Some wise person*

## Important benefits

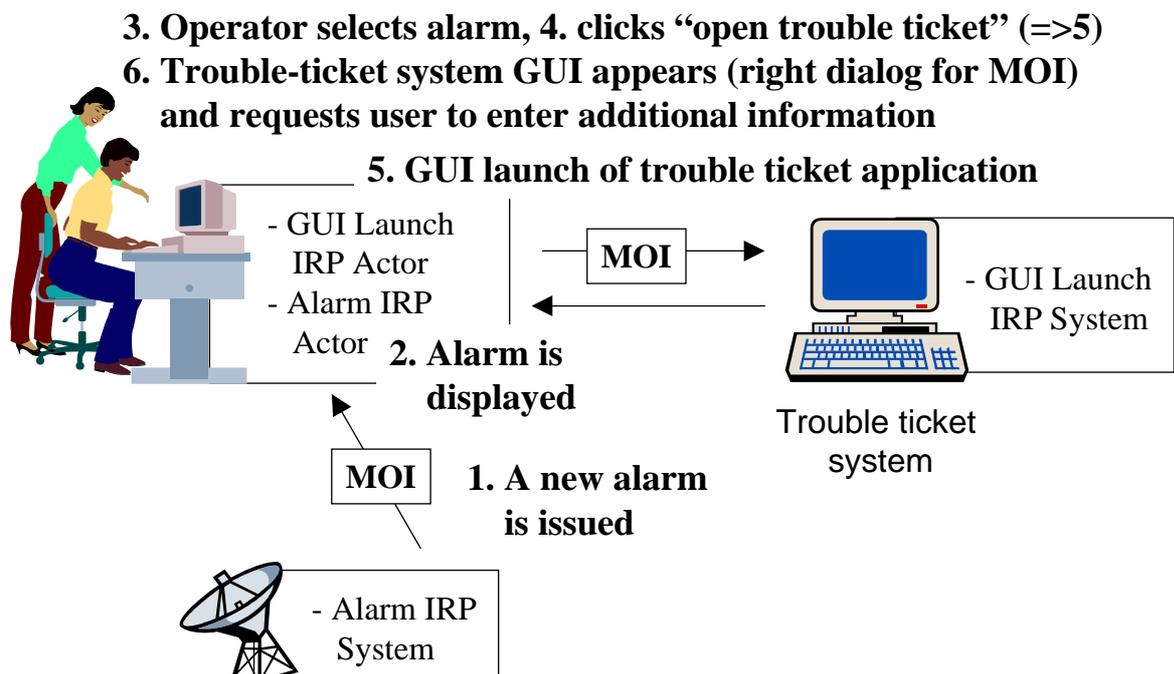
- **A user can operate a network from one screen**
- **A user can easily navigate between different levels of a management in a seamless fashion (e.g. follow a workflow).**
- **Functionality does not need to be re-implemented at different levels of an operators management system.**

## GUI launch - System behavior



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## GUI launch - scenario



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## Technical requirements on GUI Launch IRP System

- It shall be possible to launch a specific dialogue (right function, for right MOIs).
- Security needs to be covered (simple approach is user + password).
- Proposed syntax for Web-based System, GUI launch achieved by giving the proper URL
  - `http://<baseURL>?f=<function>&o=<MOIList>&user=<user>&pwd=<password>`