

# Refinement of new MIB structures for Process and rules for development of SNMP solution sets

## IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number:

IEEE C802.16i-06/025r4 (submitted as S802.16i-06/042r4)

Date Submitted:

2006-07-19

Source:

Eero Wallenius  
Nokia

v

Voice:

Fax:

E-mail: eero.wallenius@nokia.com

Venue:

IEEE802 plenary. IEEE802.16 Meeting session #44.

Base Document:

IEEE C802.16i-06/0230

Purpose:

Presentation and clarification of refinements for the choice of options for new process and rules for development of SNMP solution sets. This material was discussed on the meetings of SNMP ad-hoc group created by Netman group during session #43.

Notice:

This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

Release:

The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.

IEEE 802.16 Patent Policy:

The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <<http://ieee802.org/16/ipr/patents/policy.html>>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <<mailto:chair@wirelessman.org>> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <<http://ieee802.org/16/ipr/patents/notices>>.

# WiMax 802.16i MIB structure proposal/discussions

Eero Wallenius, Marko Siiskonen, Mikko Kylväjä, Juha Ruohola, Lauri Kähäri

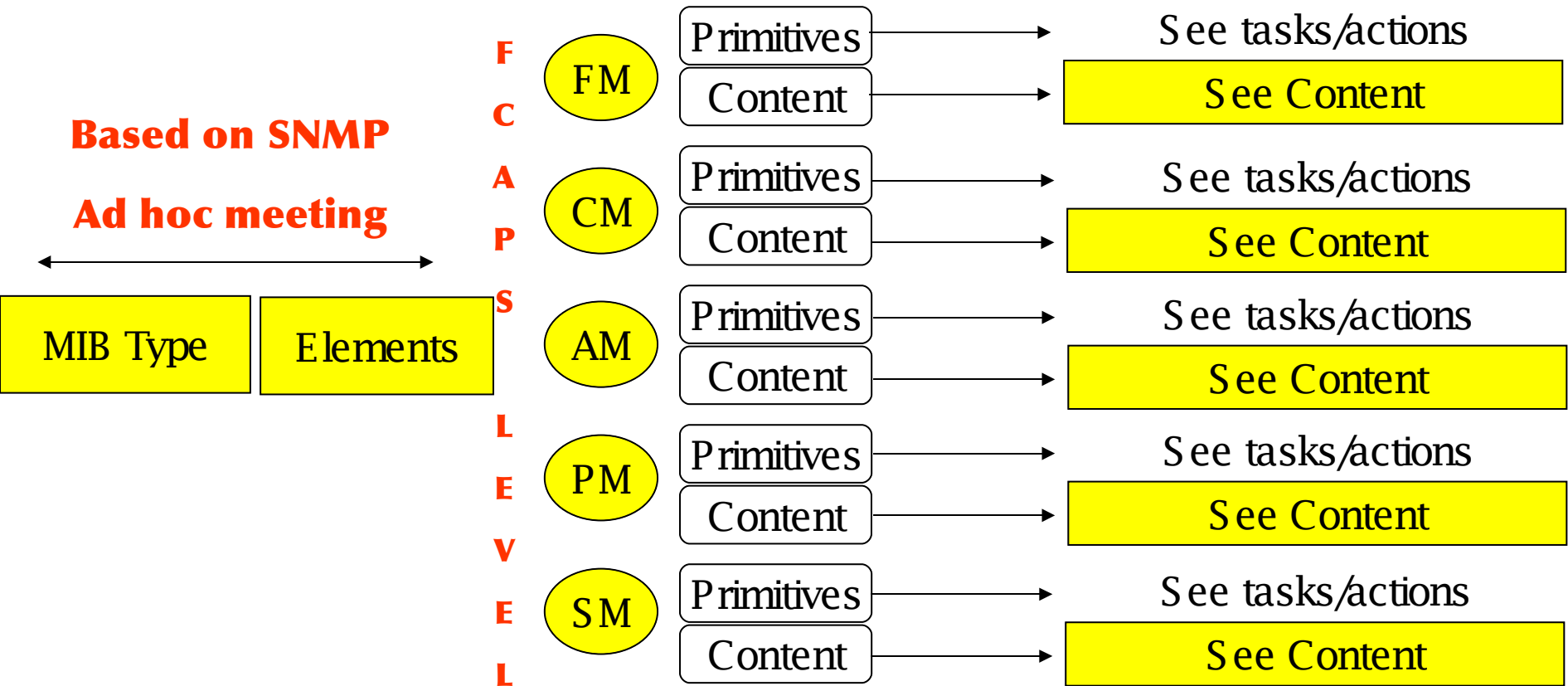
13/6/06 Draft Version 0.0.3

# Main structure hierarchy of the 802.16i MIB

Structure proposal

**MIB type (1/2/3) >> Element type BS(ASN>>) FCAPS (CM/PM/FM/AM/SM) >> Sub-class**

**Example: BS/MIB-type-2(e.g. interface MIB)/CM/Mobility/ <content>**



**Note1: Yellow color in picture of previous page means that the level will be visible in proposed standard MIB structure**

**Tasks and actions will not be visible in MIB content structure**

# Goal, pros and cons

Goal is to clarify the structure and make it standard based (ITU-T M3400) to be easier to locate right position of contributions and reveal any gaps that might come up during MIB development process.

## Pros

Enables locating fast the right standard based position of each contribution

Enables to reveal any design gap during development process

Cons none ( **restructuring the old Fixed WiMax MIB 802.16f is out of scope of this proposal**)

Does not follow the previous SNMP Ad-Hoc WG decision to use the 802.16 fixed WiMax MIB as basis for the new Mobile MIB if applied to it also. If applied only to new MIB this proposal is in line with the SNMP ad hoc meeting decision.

NOTE! As stated already (by Philip Barber) in the TelAviv meeting the new Mobile MIB uses different OID coding compared to the fixed MIB so there is no problem them to work together if necessary.

# Explanations

- **Firs** level, MIB type 1-3... (as defined in S NMP development rule proposal, based on S NMP ad-hoc meetings for rules to define MIBs)
- **Second** level of hierarchy defines the element Element can be BS, MS or (AS N, WiMax Forum issue)
- **Third** level of hierarchy defines the division based on FCAPS model, FM, CM, AM, PM and SM under NE level.
- **Fourth...** levels defines the sub classes and hierarchy as needed. Something proposed in the following slides

**Network Management System (NMS)****Tasks/actions**

- **Performance report generation**
- **Performance data analysis**
- **Problem reporting**
- **Capacity planning**
- **Maintaining and examining historical Logs**

**Network Element Tasks/actions**

- **Utilization and error rate**
- **Consistent performance level**
- **Performance data/statistics collection**

**Sub-levels and MIB Content, parameters  
& counters =>Contributions****Content classes (sub-classes)**

- **Connection**
  - For example Connection Setup Successes, Drops, Access % etc
  - Can be further classified to Traffic Classes (Rel 2+)
- **Resources**
  - Power measurements (PTXs, PRXs) (Per channel and total)
  - Load
  - Amount of allocated resources vs used resources.
  - Resources available. Overhead
  - Interference, coverage
- **Traffic**
  - How much and what?
  - User plane, control plane...
  - Throughputs (per user, per cell etc)
- **Handovers**
- **Mobility**
  - Roaming
  - Attaches, detaches

## **NMS Tasks/actions**

- **Network provisioning**
- **Auto and sub rack discovery**
- **Change management, SW upgrades**
- **Inventory/asset management**

## **Network Element Tasks/actions**

- **Resource initialization**
- **Local Backup and restore DB handling**
- **Resource shutdown**
- **Support for pre-provisioning**
- **Copy Configuration**
- **Remote configuration**
- **Initiation of jobs and tracking their execution**
- **Support for automated SW installation and information distribution**

## **Content classes (sub-classes)**

- **Connection**
  - Parameters that primarily affect connection (setups, terminations etc)
- **Resources**
  - Resource management parameters
  - Load handling
  - Interference management
  - Coverage area management
- **Traffic**
  - Traffic control parameters
- **Handovers**
  - Adjacency definitions
  - Handover parameters (triggers etc)
- **Mobility**
  - Roaming parameters

## **NMS Tasks/actions**

- **Cost for services**
- **Combine costs for multiple resources**
- **Toll fraud reporting**

## **Network Element Tasks/actions**

- **Track service/resource usage**
- **Accounting limiting**
- **Set quotas for usage**
- **Audits**
- **Support for different modes of accounting**

## **Content classes (sub-classes)**

**XXX To do XXX**



## **NMS Tasks/actions**

- **Fault detection**
- **Fault correction**
- **Fault isolation**
- **Network recovery**
- **Clear correlation**

## **Network Element Tasks/actions**

- **Alarm handling**
- **Alarm filtering**
- **Alarm generation**
- **Diagnostic tests**
- **Error logging**
- **Error handling**
- **Error statistics**

## **Content classes (sub-classes)**

- **Connection**
  - For example Connection Failure, AIS etc.
- **Resource**
  - Load alarms.
  - Service unavailability alarms.
- **Traffic**
  - Overload alarm in call processing processes.
- **Handovers**
  - Overload alarm in call processing processes related to HO.
- **Mobility**
  - MSC/VLR alarms.

## **NMS Tasks/actions**

- **User and Access management**
- **Security Monitoring**
- **Incident response and security reporting**
- **Security Administration**

## **Network Element Tasks/actions**

- **Enable NE functions**
- **Authentication**
- **Authorization**
- **Event Logs**
- **Security alarm/event reporting**
- **Network Access Control**
- **Secure Communication**
- **Data privacy**
- **Intrusion prevention**

## **Content classes (sub-classes)**

- **Connection**
  - encryption algorithms
  - access control list
- **Resources**
  - user repositories
  - Permissions
  - event logs
  - encryption algorithms for storages
- **Traffic**
  - Encrypted traffic

# More

## **More details see:**

- **ITU-T M3010 “Principles for a Telecommunications management network”**
- **ITU-T M3050**
- **ITU-T M3400**
- **TMF GB921**
- **TMF eTOM model**
- **Etc.**