IEEE 802.3
Clause 30 management, MIB, registers and function
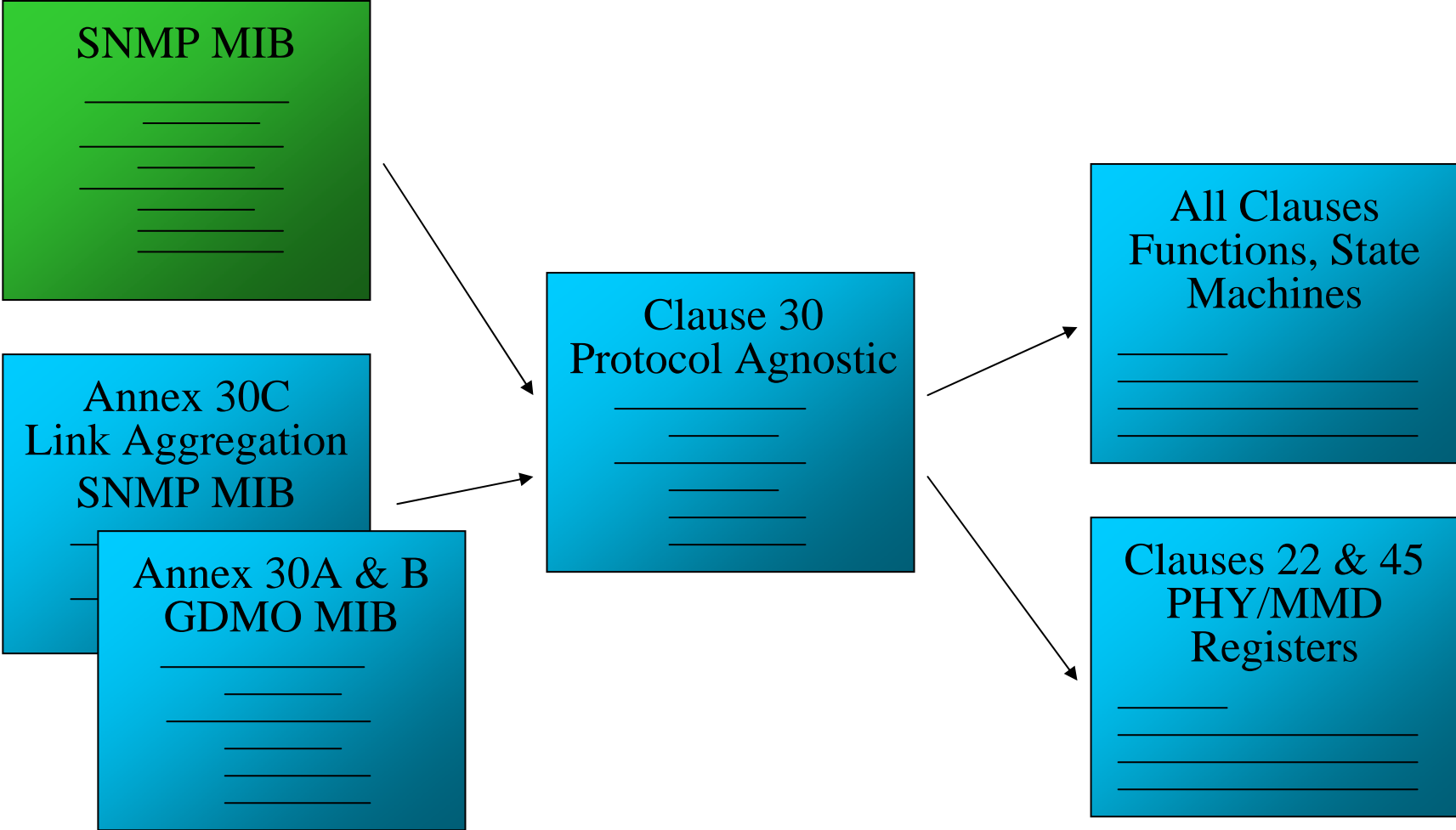
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Document Structure

- Protocol independent MIB clause
  - Clause 30

- Protocol dependent MIB annexes
  - GDMO
    - Annex 30A & 30B
  - SNMP (Link Aggregation only)
    - Annex 30C
      - Being moved to IEEE P802.1AX
      - Part of IEEE 802.3ax and IEEE 802.3ay projects

- Other SNMP MIBs were produced by IETF
  - Referenced Clause 30 definitions
    - This is no longer going to happen

Clause 30 Objects

- Generally provide Objects that are associated with hardware function
  - Object behaviour specifications reference functions and registers within the relevant Clause of 802.3

- Generally don't provide object if it doesn't require hardware support
  - Examples
    - Objects that could be calculated from other objects
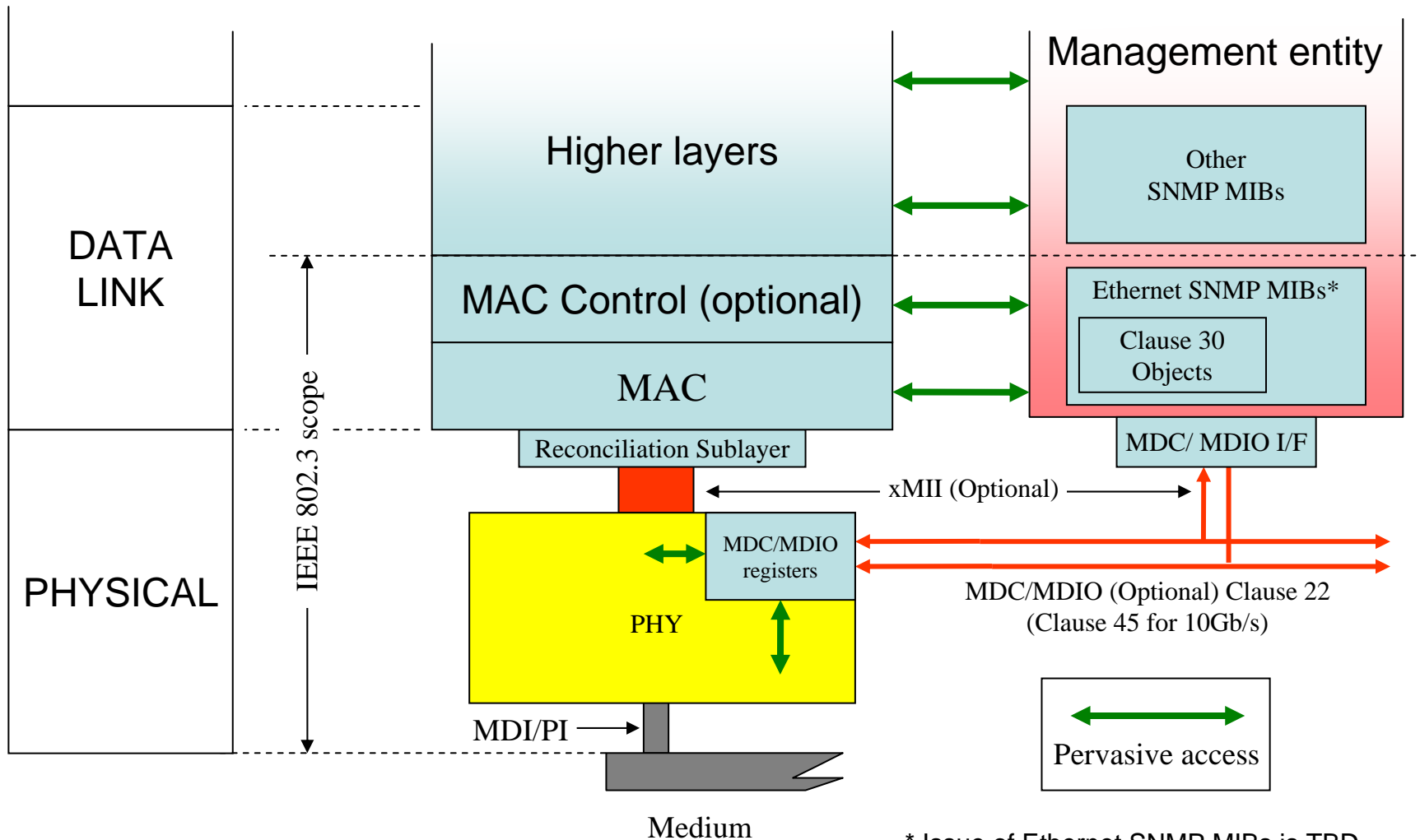 - These may be provided in SNMP MIB

References to/from Clause 30

SNMP MIB

Annex 30C
Link Aggregation
SNMP MIB

Annex 30A & B
GDMO MIB

Clause 30
Protocol Agnostic

All Clauses
Functions, State
Machines

Clauses 22 & 45
PHY/MMD
Registers

SNMP MIBs

- In the past the IETF defined and/or update SNMP MIBs for IEEE 802.3 projects
  - This was performed by the Ethernet Interfaces and Hub MIB (hubmib) Working Group
- This will no longer happen
  - First informed in March 2004
    - http://www.ieee802.org/3/minutes/mar04/0304_IETF_report.pdf#Page=8
  - Not been a huge issue for the recent 10Gb/s PHY projects
  - Will be a issue for the more complex projects
  - Comments received on this issue in rules ballot
- Steps needed for EEE SNMP MIB
  - Take on ownership of the current SNMP MIBs
    - IEEE 802.1 going through this process (RFC 4663)
  - Then add modifications to MIBs as required
 - Could do these in separate projects or in one project

Management access

Management entity

DATA LINK

PHYSICAL

IEEE 802.3 scope

Higher layers

MAC Control (optional)

MAC

Reconciliation Sublayer

xMII (Optional)

PHY

MDC/MDIO registers

MDI/PI

Medium

Other SNMP MIBs

Ethernet SNMP MIBs*

Clause 30 Objects

MDC/ MDIO I/F

MDC/MDIO (Optional) Clause 22 (Clause 45 for 10Gb/s)

Pervasive access
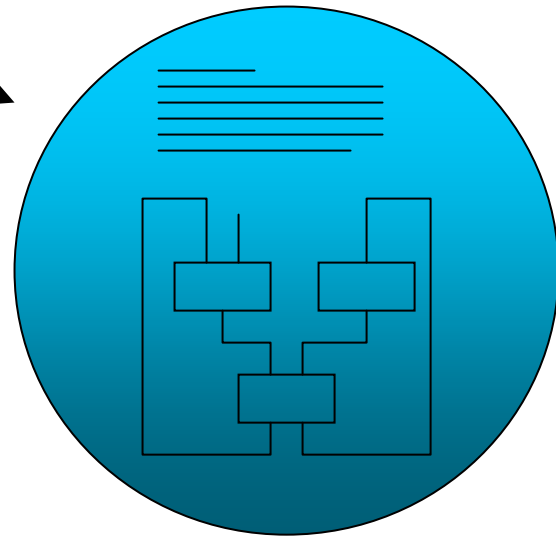
* Issue of Ethernet SNMP MIBs is TBD

MIB, Registers and Function

Function in PHY needs register access to make it manageable
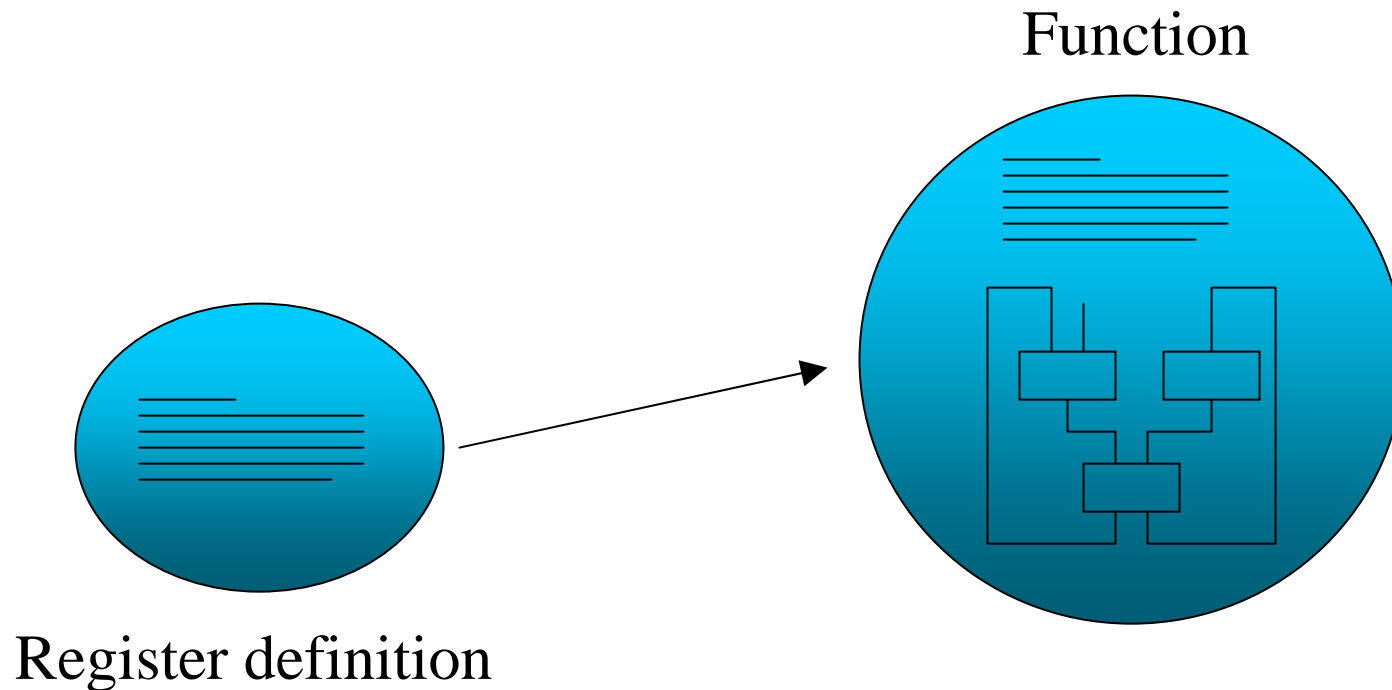
MIB definition
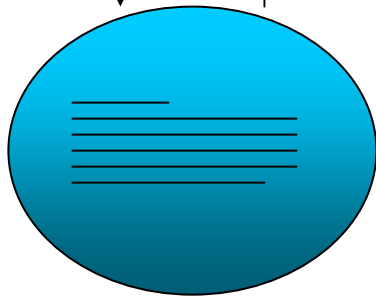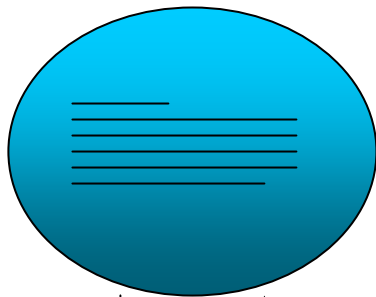
Function

Register definition

MIB, Registers and Function

But can have a register but no MIB attribute – PHY test mode
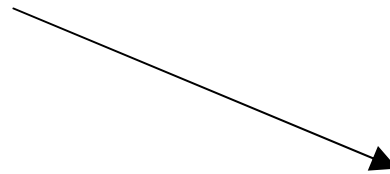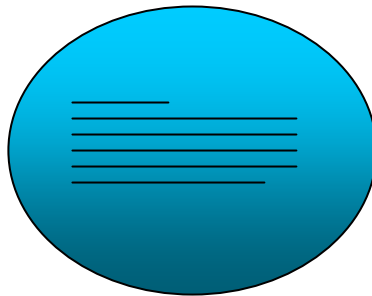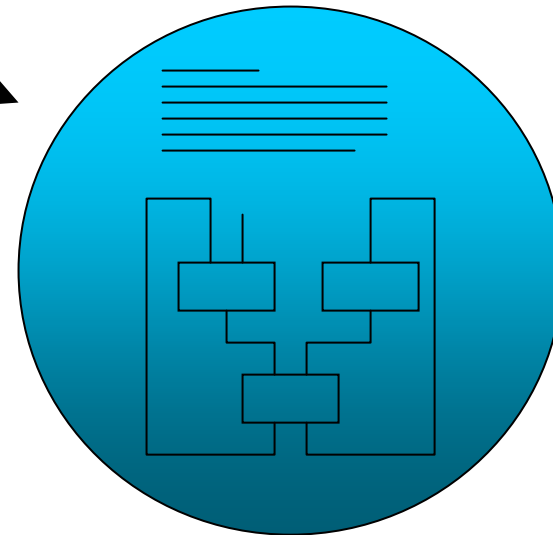
Function

Register definition

MIB, Registers and Function

And can have a MIB attribute but no register – MAC Counters
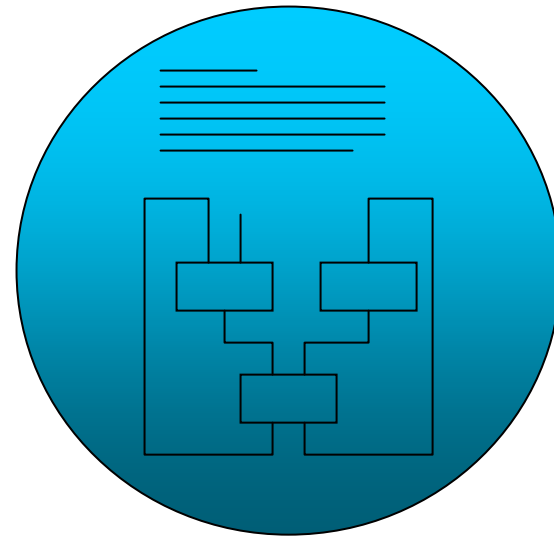
MIB definition

Function

MIB, Registers and Function

And of course can have a function but no register or MIB attribute

Function

IEEE 802.3 Operations, Administration, and Maintenance (OAM) (see Clause 57)

- Optional sublayer
  - Monitor link operation
  - Provide fault isolation
- Supports
  - Discovery
  - Events
  - Remote Loopback
  - Organization Specific Extensions
  - Variable Retrieval
- OAM is a Slow Protocol
  - Operates over a point to point link
  - Intent to be able implemented in software
- For more details see tutorial
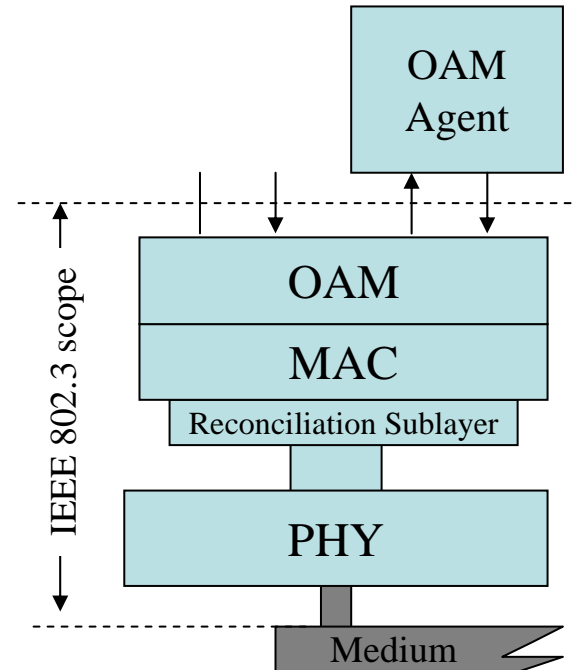
  http://www.ieee802.org/3/efm/public/jul03/oam/efm_oam_tutorial_2003_07_23.pdf

OAM Agent

IEEE 802.3 scope

OAM

MAC

Reconciliation Sublayer

PHY

Medium

OAM Variable Retrieval

- IEEE OAM provides Variable Retrieval
  - Transfer Ethernet counters and statistics
  - Variables referenced using Annex 30A (GDMO) registration arcs
    - Provides precise definition of the information
    - No requirement to actually implement MIB

- Assuming EEE needs new attributes
  - Options
    - Don't support OAM - deprecate GDMO
    - Support OAM - update GDMO
    - Support OAM - update OAM to use SNMP arcs and deprecate GDMO

Octets	
6	Destination Address
6	Source Address
2	Length/Type
1	Subtype
2	Flags
1	Code = **0x02**
42-1496	Data/Pad
4	FCS

Octets	Variable Descriptors
3	Variable Descriptor #1
3	Variable Descriptor #2

(Sample Variable Descriptor)
aFrameCheckSequenceErrors

	Octets
Variable Branch = 0x07	1
Variable Leaf = 0x0006	2
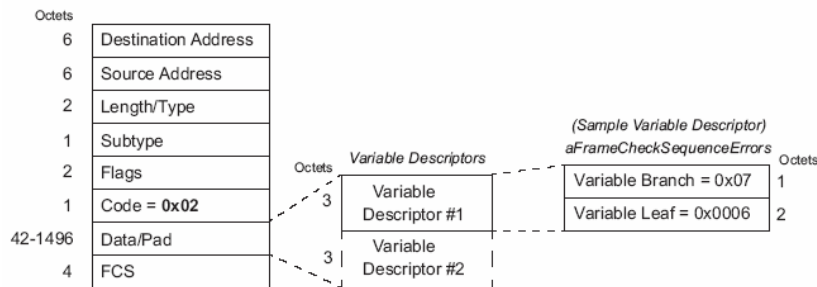
aFrameCheckSequenceErrors   **ATTRIBUTE**

DERIVED FROM   aCMCounter;
BEHAVIOUR   bFrameCheckSequenceErrors;
REGISTERED AS   {iso(1) std(0) iso8802(8802) csma(3) csmacdmgt(30) attribute(7) frameCheckSequenceErrors(6)};

bFrameCheckSequenceErrors   **BEHAVIOUR**

DEFINED AS   See "BEHAVIOUR DEFINED AS" in 30.3.1.1.6

NOTE—The approximate minimum time between counter rollovers for 10 Mb/s operation is 80 h.;

Summary

- ## Protocol agnostic Clause 30
  - ### Generally hardware related Objects
    - References functions and/or registers in other clauses

- ## Protocol devoted MIB annexes
  - ### GDMO
    - Annex 30A & 30B
    - Required to support current OAM
  - ### SNMP
    - Annex 30C
    - Resurrected after deletion by IEEE 802.3ay revision project

- ## Detailed approach to SNMP MIBs to be agreed
  - ### IEEE 802.3 wide issue