# Short-reach Copper PHY Review

IEEE 802.3ah interim meeting

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# Contributors

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# Agenda

- Introduction
- Short-reach Cu Objectives
- Short-reach Adopted Motions
- Technical Proposal Overview
- VDSL Standard Review
- Summary of Clauses 61-63
- Wrap-up

# Introduction

○ Purpose

- Review and Status Update for entire group on the "biggest" remaining Copper BTI

- Provide information and education on VDSL as used for EFM

- Head off abstentions in Ottawa & San Francisco

# Short-reach Cu Objectives

- -Hugh

# Short-reach Adopted Motions

- -Michael

# Technical Proposal Overview

○ Intro –Hugh

○ 802.3ah-developed features –Hugh

○ SCM technical recap –Steven MCM technical recap –Behrooz

○ Summary -Barry

# Technical Proposal Overview – Summary

- EFM is building on existing technology for data transmission over the voice-grade copper public access network.
- We're simplifying the protocol stack, and ensuring interoperability
- Adding Ethernet-specific features
  - Robust encapsulation
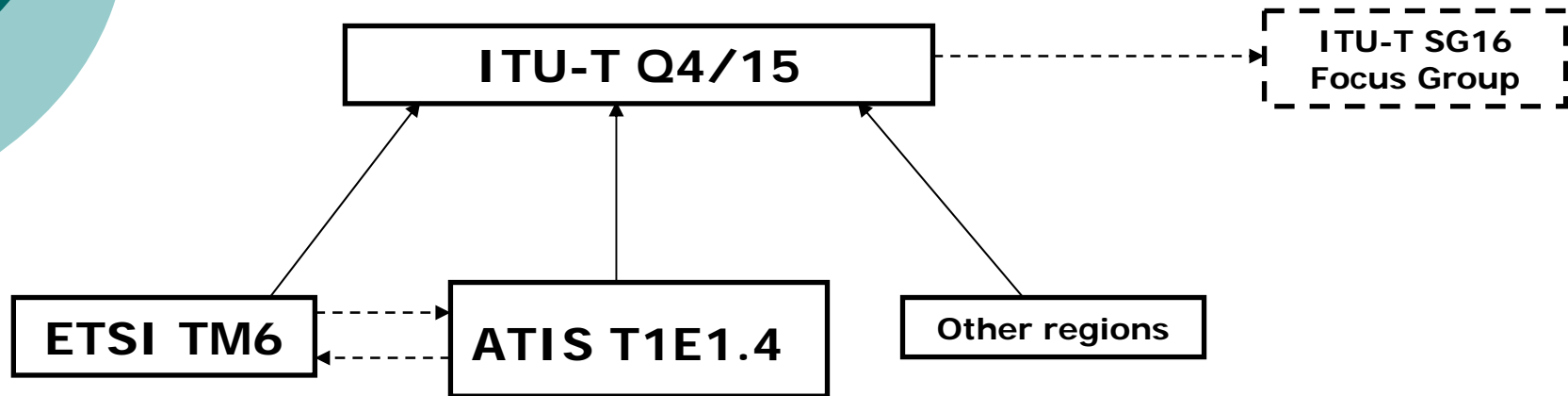  - PMI aggregation
  - Port control & OAM

# VDSL Standards Review

- Overview
- ETSI, ITU-T Q4/15, SG16
- T1E1.4 -Ed

# VDSL Standards Overview

- SDO's involved in VDSL
  - ATIS T1E1.4 (www.t1.org)
    - ANSI DSL PHY standards
  - ETSI TM6 (www.etsi.org)
    - European DSL SDO
  - ITU-T Q4 / SG15 (www.itu.int)
    - Global DSL PHY standards
  - ITU-T SG16 FS-VDSL Focus Group (www.fs-vdsl.net)
    - Services and applications specs. For VDSL

# VDSL Standards Overview (2)

# VDSL SDO's

- ATIS T1E1.4
  - Current T1.424 VDSL PHY  trial-use ANSI standard
  - Two line codes
  - Due to expire in 2004
- ETSI TM6
  - European Telecommunications Standards Institute
    - EU-recognized SDO
  - Two line code VDSL standards
  - Similar to T1.424, with region-specific PSD variations
    - TS 101 270-1 V1.2.1 – functional and electrical requirements
    - TS 101 270-2 V1.1.1 – PMD definitions

# VDSL SDO's (2)

- ITU-T Q4 / SG15
  - ITU: International Telecommunication Union
    - U.N. Specialized Agency Treaty Organization
    - 100+ yrs old
  - ITU-T: ITU – Telecommunication Standardization Sector
    - Develops "voluntary Recommendations"
  - G.993.1 VDSL PHY Recommendation
    - Defines Band plans and "PCS" sublayer
    - Line code not yet defined
      - Long-standing open issue
      - January SG meeting set goal for July decision

# VDSL SDO's (3)

- ITU-T SG16 FS-VDSL Focus Group
  - FS-VDSL: Full Service VDSL
  - Outgrowth from FSAN subcommittee,
  - Now an official ITU-T Focus Group,
  - Affiliated with SG16 multimedia protocols and services group
  - Not a PHY standardization body

# ATIS T1E1

- -Ed

# Summary of Clauses 61-63

○ -Michael

# Wrap-up

- -Barry