Update IEEE HSSG Process

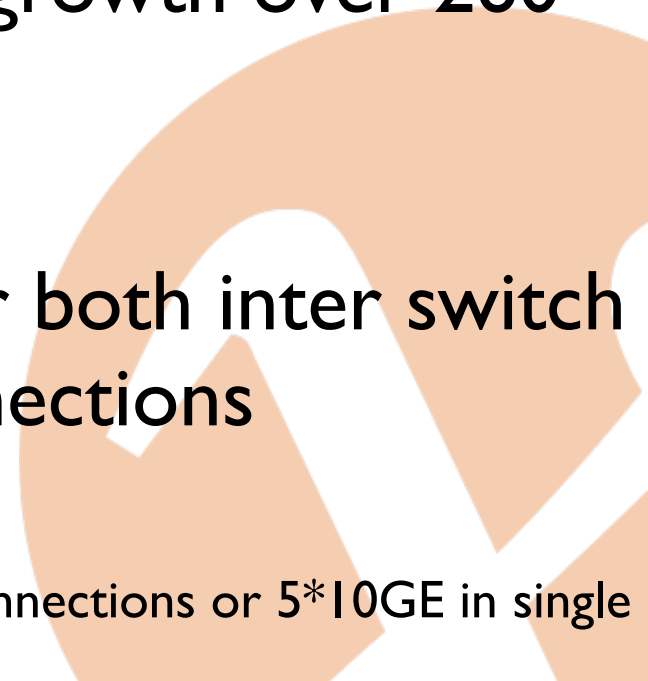## RIPE 54

Henk.Steenman@ams-ix.net
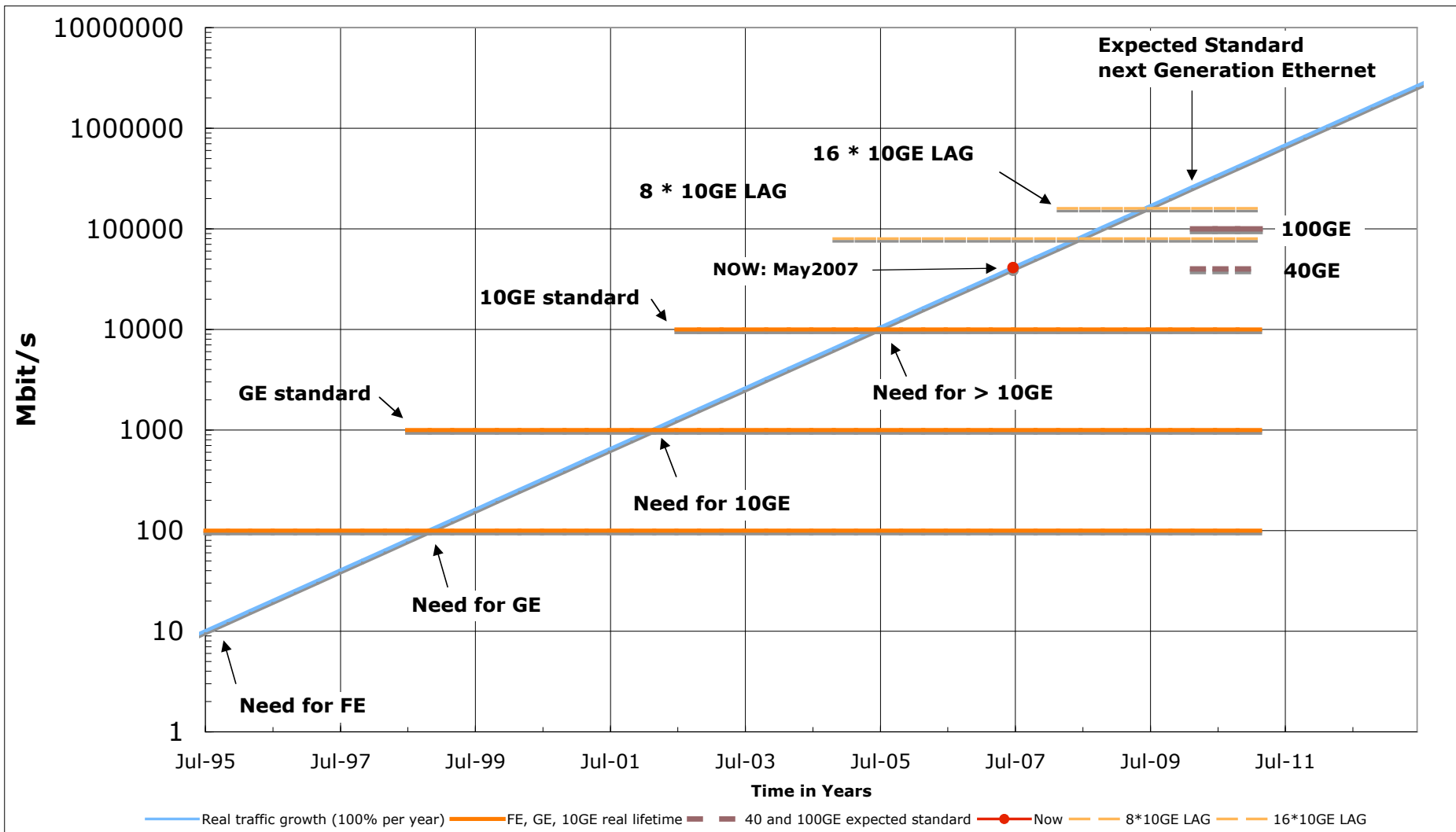
IEEE HSSG

- ▶ Higher Speed Study Group

  - ▶ Essentially the next generation Ethernet

- ▶ Objective of the study group is to define the project(s) for an IEEE task force
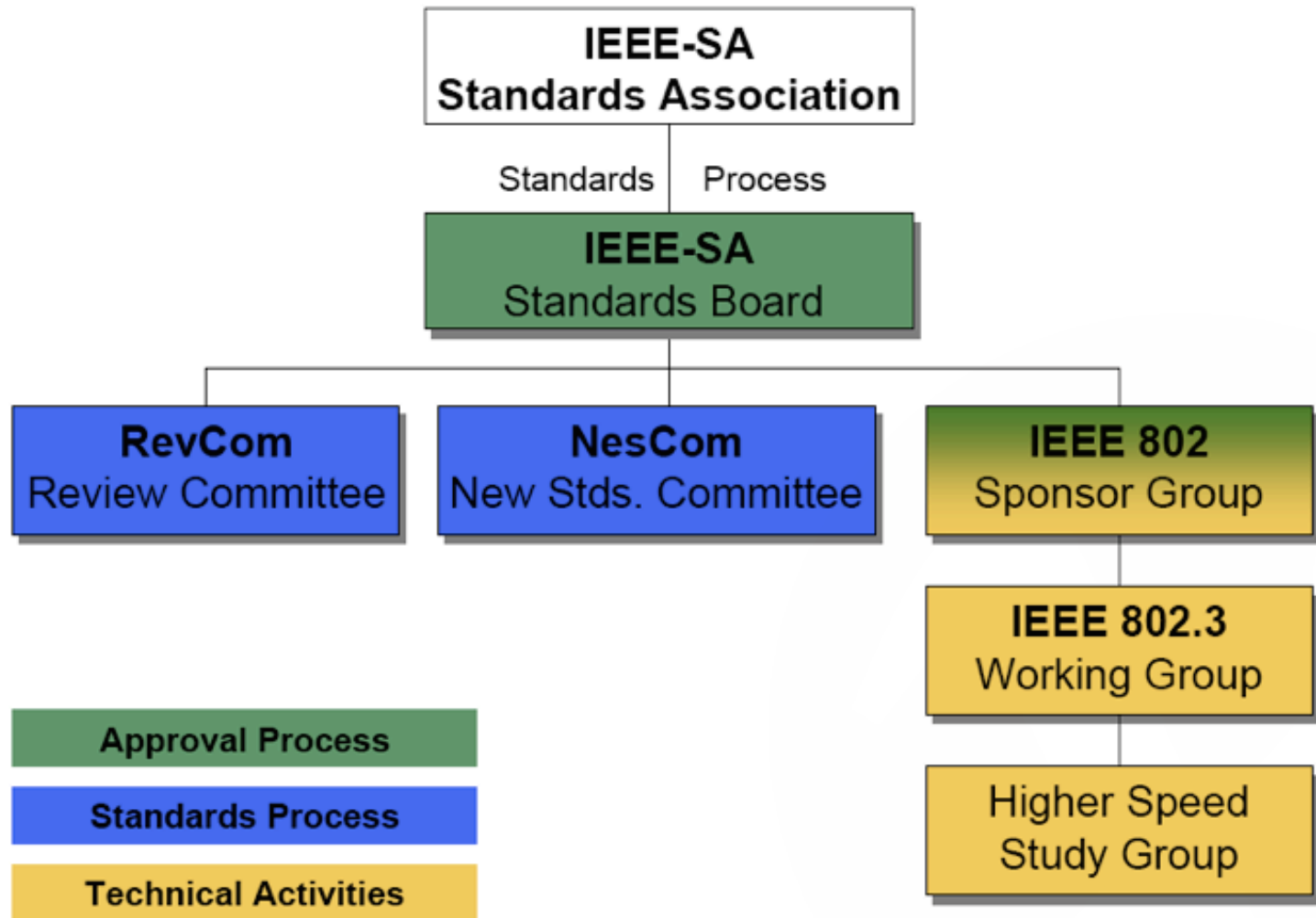
  - ▶ This task force will work out the actual standard

Why

▸ On AMS-IX roughly 100% traffic growth per year

▸ This represents the average growth over 260 connected members

  ▸ Many members grow faster !

▸ Capacity increase needed for both inter switch links as well as member connections

  ▸ Inter switch links exceed 8 *10GE LAG

  ▸ Member connections up to 6*10GE in 2 connections or 5*10GE in single connection

Ethernet standards versus 100% yearly traffic growth

IEEE Structure

IEEE-SA
Standards Association

Standards | Process

IEEE-SA
Standards Board

RevCom
Review Committee

NesCom
New Stds. Committee

IEEE 802
Sponsor Group

IEEE 802.3
Working Group

Higher Speed
Study Group

Approval Process

Standards Process

Technical Activities
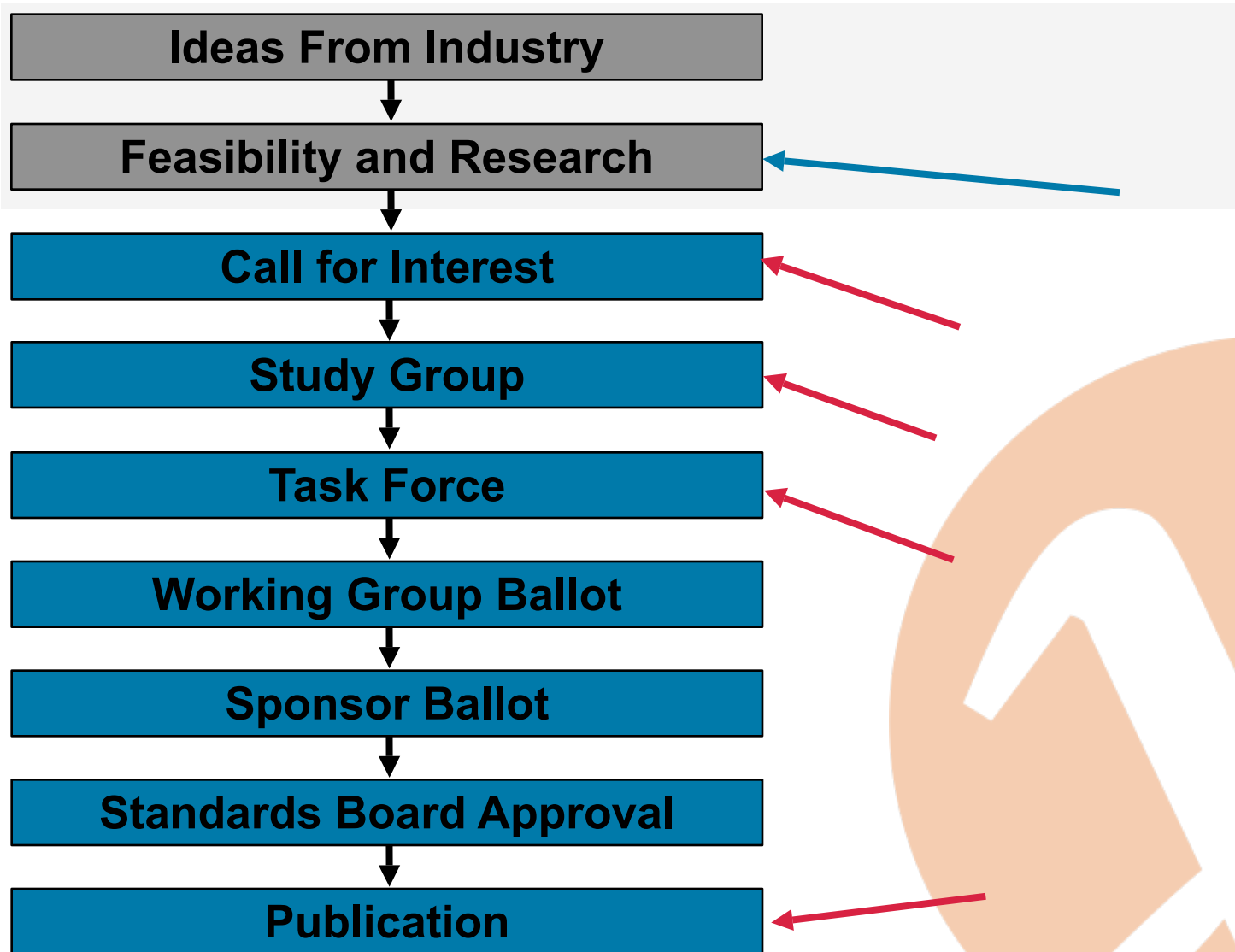
IEEE standards process
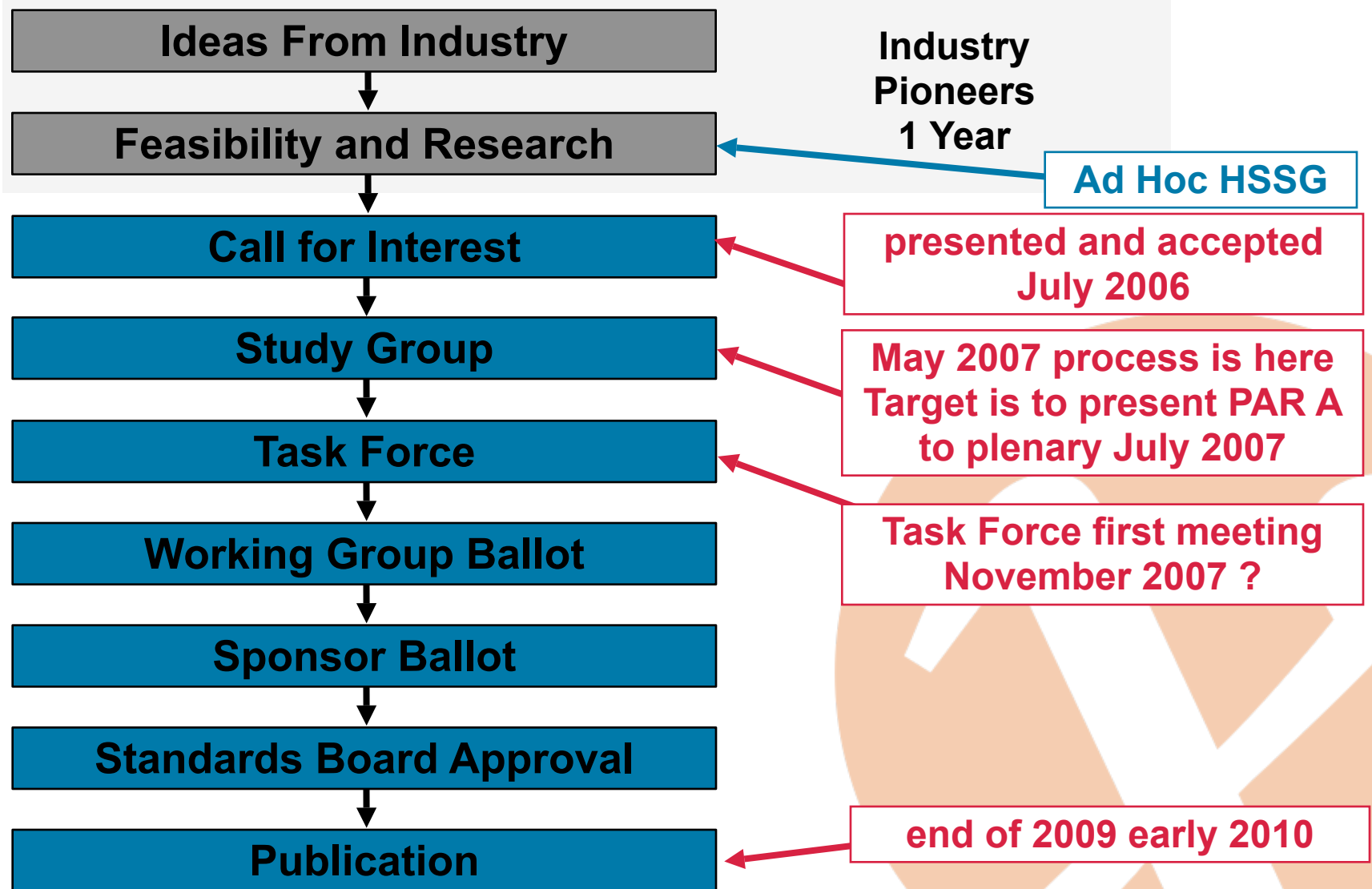
HSSG Objectives

▶ Define PAR

  ▶ Project Authorization Request
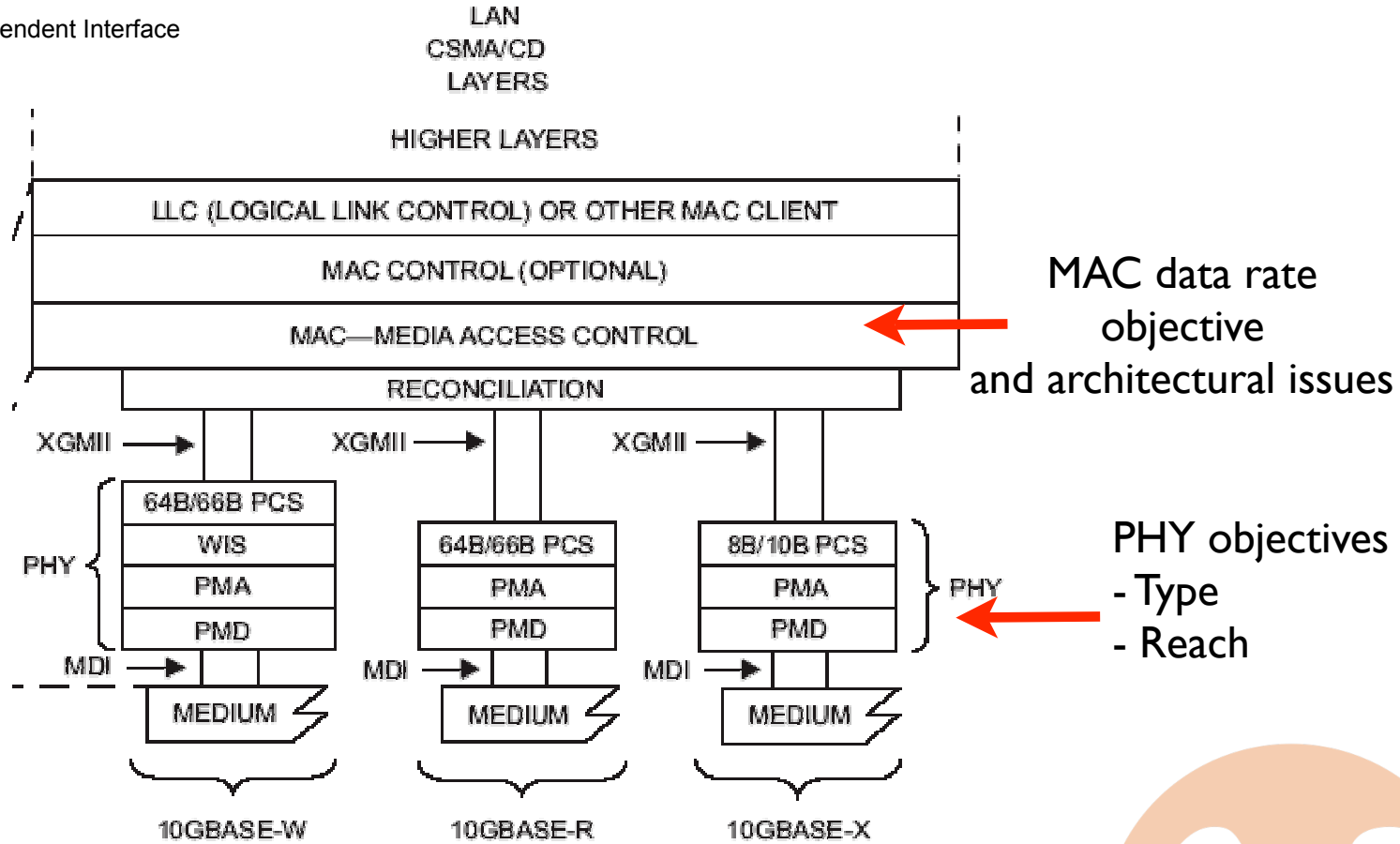
▶ Project objectives

▶ 5 Criteria should support each objective

  ▶ Broad market potential

  ▶ Compatibility with IEEE 802.3 standard

  ▶ Distinct identity

  ▶ Technical Feasibility
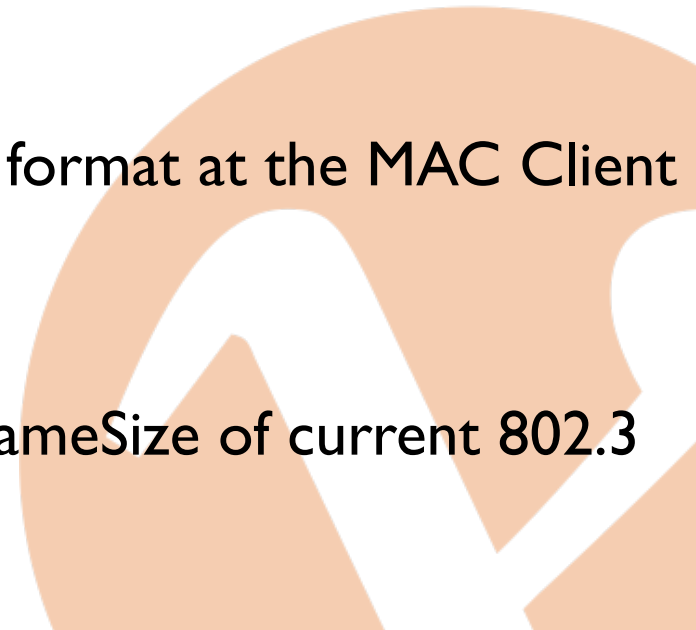
  ▶ Economic Feasibility

MDI - Medium Dependant Interface
PCS - Physical Coding Sublayer
PHY - Physical Layer Device
PMA - Physical Medium Attachment
PMD - Physical Medium Dependent
WIS - WAN Interface Sublayer
XGMII - 10 Gigabit Media Independent Interface

LAN
CSMA/CD
LAYERS

HIGHER LAYERS

LLC (LOGICAL LINK CONTROL) OR OTHER MAC CLIENT

MAC CONTROL (OPTIONAL)

MAC—MEDIA ACCESS CONTROL

MAC data rate objective
and architectural issues

RECONCILIATION

XGMII

XGMII

XGMII

64B/66B PCS

WIS

PMA

PMD

64B/66B PCS

PMA

PMD

8B/10B PCS

PMA

PMD

PHY

PHY

PHY objectives
- Type
- Reach

MDI

MDI

MDI

MEDIUM

MEDIUM

MEDIUM

10GBASE-W

10GBASE-R

10GBASE-X

HSSG focus

Current Status - May 2007

▶ Support a speed of 100 Gb/s at the MAC/PLS interface

    ▶ approved 11/16/06, votes: All 67/9/14, 802.3 26/4/11

▶ Support full-duplex operation only

    ▶ approved 11/16/06:, votes: All 73/0/4

▶ Preserve the 802.3 / Ethernet frame format at the MAC Client service interface

    ▶ approved 11/16/06, votes: All 76/0/4

▶ Preserve minimum and maximum FrameSize of current 802.3 Std

    ▶ approved 11/16/06, votes: All 74/0/4

Current Status - May 2007

▸ Support at least 40-km on SMF.

  ▸ approved 4/19/07, votes:All 38/10/32, 802.3 12/6/16

▸ Support at least 10km on SMF.

  ▸ approved 11/16/06, votes:All 86/0/4, 802.3 40/0/4

▸ Support at least 100 meters on OM3 MMF.

  ▸ approved 11/16/06, votes:All 61/3/27, 802.3 33/2/13

▸ support at least 10m over a copper cable assembly.

  ▸ approved 4/19/07, votes:All 51/0/15, 802.3 23/0/7

▸ Support a BER better than or equal to 10-12 at the MAC /PLS service interface.

  ▸ approved 1/19/07, votes:68/0/4

Current Status - May 2007

▶ A working group draft for the HSSG Project Authorization Request (PAR) is available at:

   ▶ http://grouper.ieee.org/groups/802/3/hssg/PAR-A/par_workingdraft.pdf

▶ The 5 criteria for the current objectives are addressed:

   ▶ http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG_PARA_5C_WD_0107.pdf

Possible implementations

▶ The HSSG does **not** define technical solutions

  ▶ It investigates if a standard is technically, economically etc feasible.

  ▶ Participants show possible solutions to implement a new standard

  ▶ The 100GE standard might be implemented as 100 Gbit/s serial at the MAC level.

  ▶ But use multiple parallel paths at the physical level

    ▶ Solutions have been shown using 4x25, 5x20 and 10x10 paths

100GE versus or next to 40GE

▸ There is a renewed discussion on 40GE

  ▸ At the start of the project the discussion was about 40 or 100GE

  ▸ Now the discussion is to have 40GE as a second objective next to 100GE

    ▸ From the beginning of the project there have been participating individuals that consider 10GE a failure.

    ▸ This in the context that the market for 10GE is much and much smaller than anticipated based on the adoption of GE.

  ▸ A NOTE: 40GE standard process will take as long as 100GE process (end of 2009 earliest)

100GE versus or next to

▸ Proponents of a 40GE standard see a split in the market

- ▸ 100GE for use in network cores and aggregation points
- ▸ 40GE for server interconnect
  - ▸ The need for this is estimated to be 5 to 8 years from now.
- ▸ A second group of 40GE proponents see a better fit with existing SDH/SONET and or OTN based networks

▸ To prevent delay in the start of task force, debate needs conclusion in may Geneva meeting

IEEE HSSG meetings

▶ Next meeting of the study group

  ▶ IEEE HSSG interim meeting, Geneva,

    ▶ Switzerland. May 28 to 31.

  ▶ IEEE 802.3 plenary, San Francisco, US. July 16 to 19.

    ▶ Propose PAR to 802.3 to get to working group status

IEEE HSSG information

- ▶ Website
  - ▶ http://www.ieee802.org/3/hssg/
- ▶ Mail reflector
  - ▶ Listserv@ieee.org
    - ▶ Body text:
      - ▶ Subscribe stds-802-3-hssg <first name> <last name>
      - ▶ end