Closing Report

IEEE P802.3bs 400GbE Task Force

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San Diego, CA, USA

IEEE 802 Jul 2014 Plenary

Reflector and Web

- To subscribe to the 400G reflector, send an email to:

  ListServ@ieee.org

  with the following in the body of the message (do not include "<>"):

  subscribe stds-802-3-400G <yourfirstname> <yourlastname>

  end

- Send 400G reflector messages to:

  STDS-802-3-400G@listserv.ieee.org

- Task Force web page URL:

  http://www.ieee802.org/3/bs/index.html

- Ad hoc area URL:

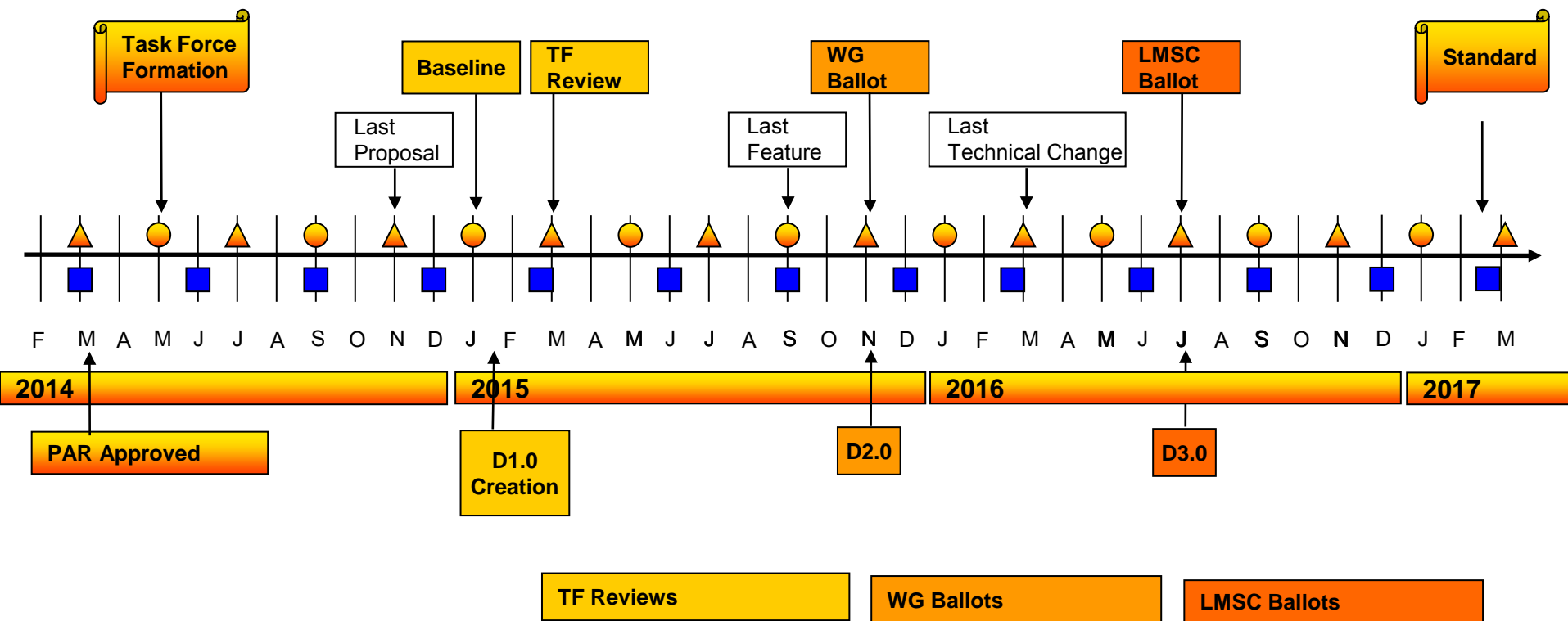 **_http://www.ieee802.org/3/bs/public/adhoc/index.shtml_**

Task Force Team

- John D'Ambrosia: Chair

- Mark Gustlin, Logic Ad Hoc Chair

- Pete Anslow: SMF Ad hoc Chair

- Jonathan King: MMF Ad Hoc Chair

- Gary Nicholl: Use Case Ad Hoc Chair

Project Objectives

- Support a MAC data rate of 400 Gb/s

- Support a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent)

- Support full-duplex operation only

- Preserve the Ethernet frame format utilizing the Ethernet MAC

- Preserve minimum and maximum FrameSize of current Ethernet standard

- Provide appropriate support for OTN

- Specify optional Energy Efficient Ethernet (EEE) capability for 400 Gb/s PHYs

- Support optional 400 Gb/s Attachment Unit Interfaces for chip-to-chip and chip-to-module applications

- Provide physical layer specifications which support link distances of:
    - At least 100 m over MMF
    - At least 500 m over SMF
    - At least 2 km over SMF
    - At least 10 km over SMF

IEEE P802.3bs 400GbE Adopted Timeline

Task Force Formation

Baseline

TF Review

WG Ballot

LMSC Ballot

Standard

Last Proposal

Last Feature

Last Technical Change

F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M

2014

2015

2016

2017

PAR Approved

D1.0 Creation

D2.0

D3.0

TF Reviews

WG Ballots

LMSC Ballots

Legend
△ IEEE 802 Plenary
○ IEEE 802.3 Interim
■ IEEE-SA Standards Board

Adopted by IEEE P802.3bs 400GbE Task Force, May 2014 Interim.

This Week

- ≈ 156 Attendees
- Reviewed Response from OIF
- Reviewed 35 Technical Presentations
- Motions:
  - Move to adopt the baseline for the CDMII logical interface as shown in slide 5 of gustlin_3bs_03_0714.pdf Results: All y/n/a: 97/0/12
  - Move that 10km 400GbE SMF PMD will use a duplex fiber solution. Results: All y/n/a: 96/1/15
  - Move that 2km 400GbE SMF PMD will use a duplex fiber solution. Results: Withdrawn
- Straw polls – see next slides

Straw Polls (1of 3)

| 1	I support FEC for optical PMDs	
	a) FEC Mandatory	**69**
	b) FEC optional	**7**
	c) Some PMDs may not need FEC	**0**
	d) Mandatory for some / optional for others	**10**
	e) Need more information	**10**
2	**For Chip-to-Module interconnect:** I support the following chip-to-module ELECTRICAL interconnect for 400GbE	
	a) 8 lane by 50Gb/s only	**7**
	b) 16 lane by 25Gb/s only	**33**
	c) Both 8 lane by 50Gb/s and 16 lane by 25Gb/s	**67**
	d) ALL 3 options [4 lane by 100Gb/s, 8 lane by 50Gb/s and 16 lane by 25Gb/s]	**2**
	e) Some other interconnect rate or lane combination than listed	**0**
3	**For Chip-to-Module interconnect:** I support the following chip-to-module ELECTRICAL interconnect modulation for 400GbE	Chicago Rules
	a) NRZ for 25Gb/s	84
	b) PAM4 for 25Gb/s	4
	c) NRZ for 50Gb/s	34
	d) PAM4 for 50Gb/s	66
4	**For Chip-to-Module interconnect:** I support FEC for the chip-to-module ELECTRICAL interconnect	
	a) FEC Mandatory for 50Gb/s	62
	b) FEC optional for 50Gb/s	16
	c) NO FEC needed for 50Gb/s	0
	d) Need more information	17

Straw Polls (2 of 3)

5	**For Chip-to-chip interconnect:** I support the following chip-to-chip ELECTRICAL interconnect for 400GbE
	    a) 8 lane by 50Gb/s only
	    b) 16 lane by 25Gb/s only
	    c) Both 8 lane by 50Gb/s and 16 lane by 25Gb/s
	    d) ALL 3 options [4 lane by 100Gb/s, 8 lane by 50Gb/s and 16 lane by 25Gb/s]
	    e) Some other interconnect rate or lane combination than listed
		
		9
		22
		56
		1
		0

6	**For Chip-to-chip interconnect:** I support the following chip-to-chip ELECTRICAL interconnect modulation for 400GbE
	    a) NRZ for 25Gb/s
	    b) PAM4 for 25Gb/s
	    c) NRZ for 50Gb/s
	    d) PAM4 for 50Gb/s
		Chicago Rules
		
		75
		3
		30
		64

7	**For Chip-to-chip interconnect:** I support FECfor the chip-to-chip ELECTRICAL interconnect
	    a) FEC Mandatory for 50Gb/s
	    b) FEC optional for 50Gb/s
	    c) NO FEC needed for 50Gb/s
	    d) Need more information
		
		20
		21
		0
		46

8	I support:
	    a. Using end-to-end FEC wherever possible.
	    b. Using segment-by-segment FEC always.
	    c. Using encapsulated FEC's
	    d. Need additional information
		
		49
		6
		2
		40

Straw Polls (3 of 3)

9	If all PMDs developed in P802.3bs include mandatory FEC and FEC error statistics are available, do we also require BIP?	
	Yes	4
	No	24
	Abstain	69
10	If BIP is required, should it be implemented:	
	a) Segment by segment (optimized for fault isolation)	2
	b) End-to-end (optimized for service assurance)	6
	c) Need more information	35
	d) Not required / don't care	33
11	I would support a baseline proposal for the 100m MMF objective based on a 16 fiber (each direction), 25Gb/s per fiber solution	
	Yes	42
	No	18
	Need Additional Information	26

Interrelations Between Technical Decisions

Note – may differ for each PMD.
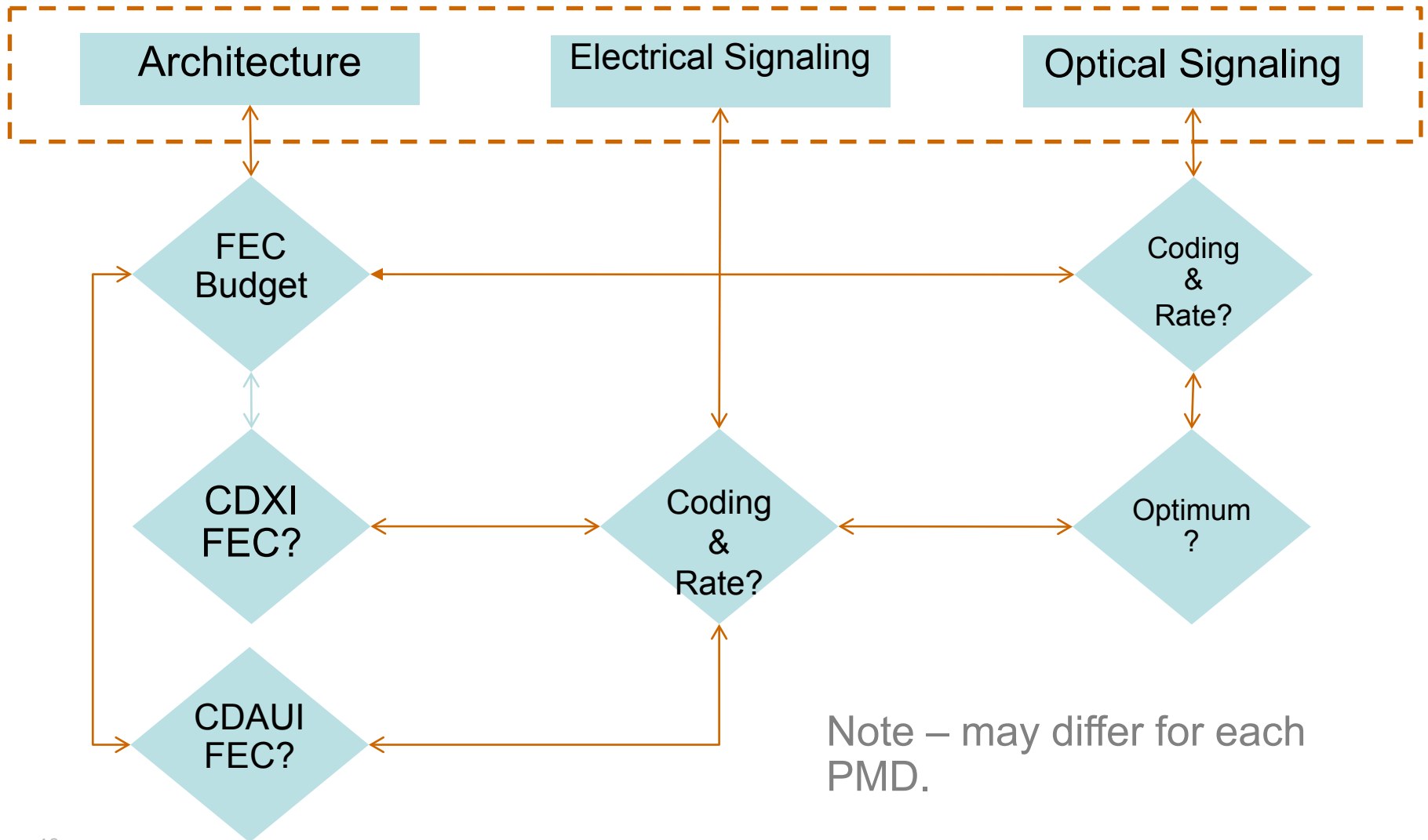
Moving Forward

- Offline consensus building for future ad hoc meetings and Sept Interim

- Ad hoc meetings to be announced
  - Will be listed on Ad Hoc Page
    http://www.ieee802.org/3/bs/public/adhoc/index.shtml

Future Meetings

- See: http://www.ieee802.org/3/interims/index.html

- Sept 2014 Interim
  - Week of September 8
  - Brookstreet Hotel, Ottawa, Canada

- Nov 2014 Plenary
  - Week of November 2
  - Grand Hyatt San Antonio, San Antonio, TX, USA

- Jan 2015 Interim
  - Week of Jan 12
  - TBA

- Mar 2015 Plenary
  - Week of Mar 8
  - Estrel Hotel and Convention Center, Berlin, Germany

- May 2015 Interim
  - Week of May 18, 2015
  - TBA

- Anyone interested in hosting a meeting or webex contact me.

Thank You!