## Closing Report

IEEE P802.3bs 400GbE Task F orce

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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

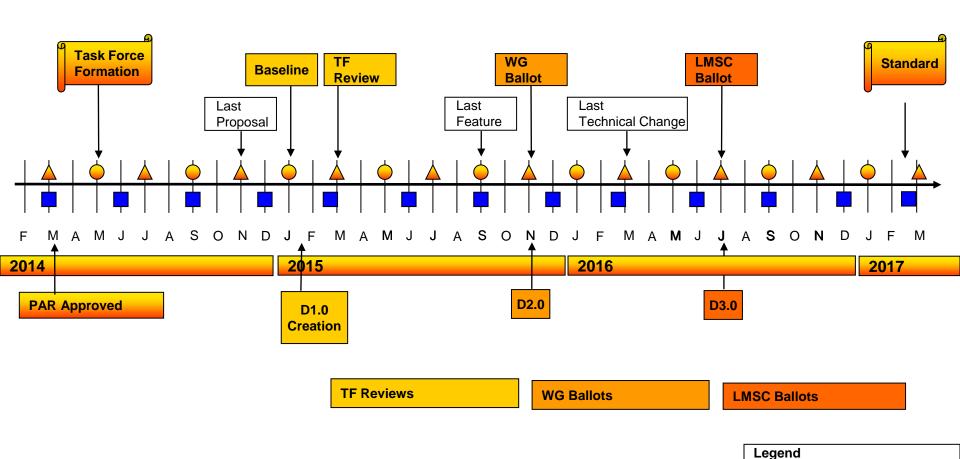
#### Task Force Team

- 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<sup>-13</sup> 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**



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

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▲ IEEE 802 Plenary

○ IEEE 802.3 Interim

■ IEEE-SA Standards Board

#### 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 Results: Withdrawn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 b) FEC optional c) Some PMDs may not need FEC d) Mandatory for some / optional for others e) Need more information	69 7 0 10 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 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	7 33 67 2 0
3	For Chip-to-Module interconnect: I support the following chip-to-module 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  84 4 34 66
4	For Chip-to-Module interconnect: I support FEC for the chip-to-module 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	62 16 0 17

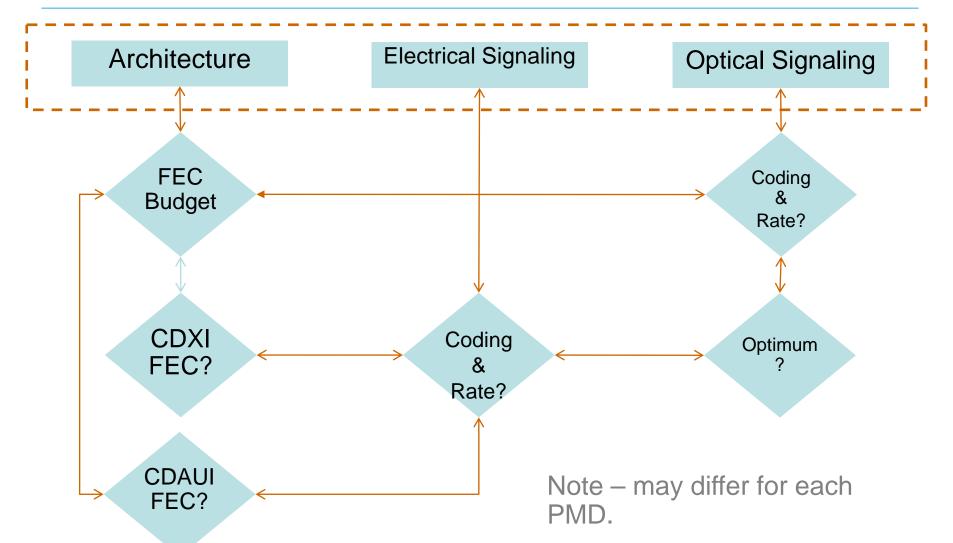
### Straw Polls (2 of 3)

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  No  Abstain	4 24 69
10	If BIP is required, should it be implemented:  a) Segment by segment (optimized for fault isolation)  b) End-to-end (optimized for service assurance)  c) Need more information  d) Not required / don't care	2 6 35 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  No  Need Additional Information	42 18 26

#### **Interrelations Between Technical Decisions**



## 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
     <a href="http://www.ieee802.org/3/bs/public/adhoc/index.shtml">http://www.ieee802.org/3/bs/public/adhoc/index.shtml</a>

### **Future Meetings**

- See: <a href="http://www.ieee802.org/3/interims/index.html">http://www.ieee802.org/3/interims/index.html</a>
- 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!