

IEEE P802.3dj – Moving Forward

IEEE P802.3df Task Force IEEE 802 Nov 2022 Session

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The Role of the Chair / Vice Chair

- Per the IEEE 802.3 Ethernet WG Operations Manual (http://www.ieee802.org/3/rules/P802_3_rules.pdf)
 - Per 3.4 - Operation of the Task Force
 - The operation of the TF has to be balanced between democratic procedures that reflect the desires of the TF members and the TF Chair's responsibility to produce a draft standard, recommended practice, or guideline in a reasonable amount of time for review and approval by the WG. Robert's Rules of Order shall be used in combination with these operating rules to achieve this balance.
 - The full responsibilities of the chair are specified in 3.4.3 Task Force Chair's Responsibilities.
 - The Role of the Vice Chair is specified in 3.2 –
 - There may be a TF Vice-Chair. A TF Vice-Chair carries out the TF Chair's duties if the TF Chair is temporarily unable to do so or chooses to delegate specific duties.
- Reminders –
 - We are a contribution driven organization. It should not be assumed by anyone that work will just get done without contributions to drive it. Areas not moving forward will be brought to the attention of the Task Force for consideration on how to address.
 - Individual standards activities within the WG are, at the discretion of the WG, carried out by Task Forces (TF) operating under, and reporting to, the WG.

IEEE P802.3dj Task Force Formation Jan 2023

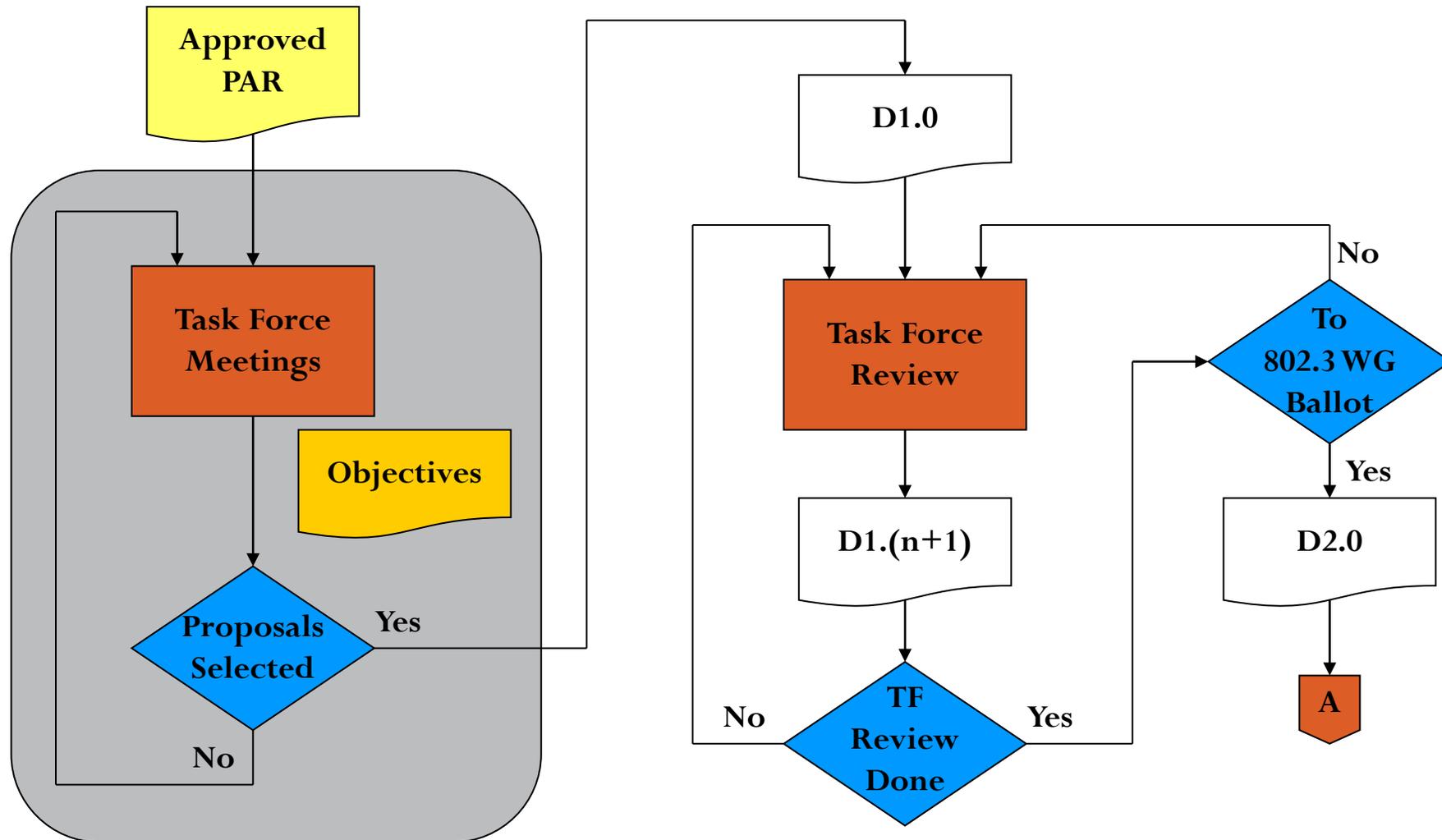
- Pending Approval of IEEE P802.3df PAR modification and IEEE P802.3dj PAR
 - Task Force Leadership

	Leadership
Task Force	John D'Ambrosia, Chair Mark Nowell, Vice-Chair
Logic Track	Mark Gustlin, Chair
Optics Track	Mark Nowell, Chair
Electrical Track	Kent Lusted, Chair

- Reaffirmation of TF motions made by IEEE P802.3df that are relevant to IEEE P802.3dj
- Consideration of IEEE P802.3dj Task Force Timeline

Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase

We are here



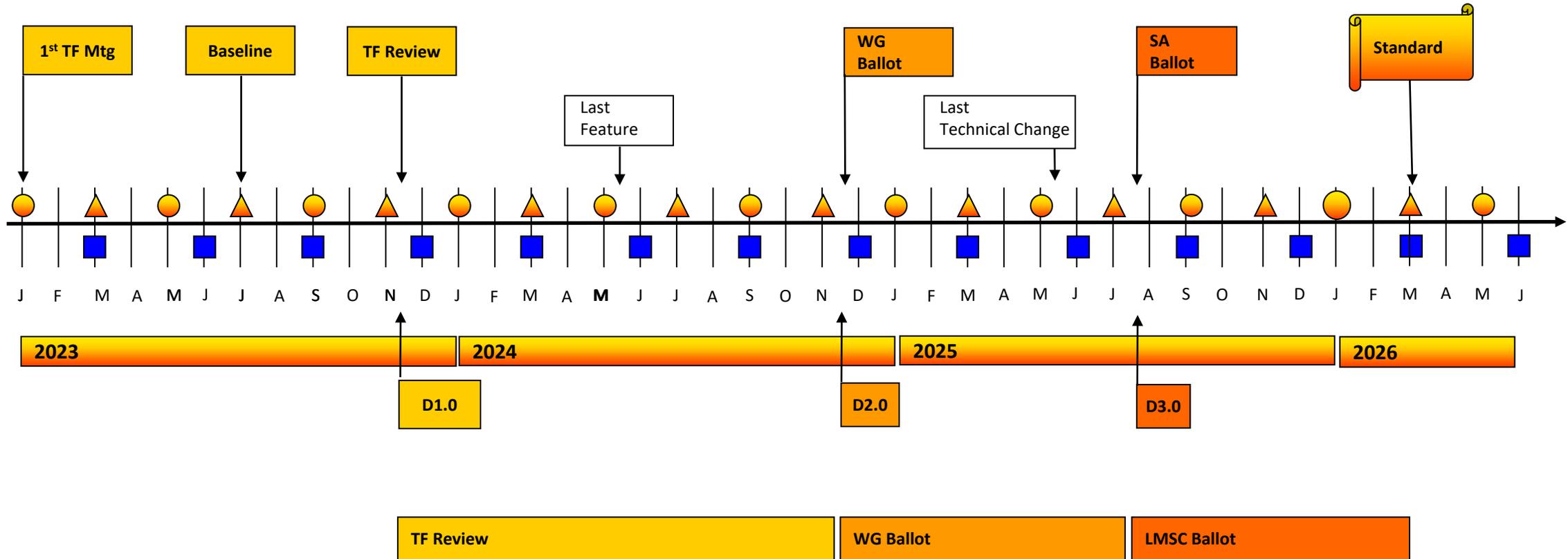
Summary of IEEE P802.3dj Objectives

Ethernet Rate	Assumed Signaling Rate	AUI	Cu Cable	SMF 500m	SMF 2km	SMF 10km	SMF 40km
200 Gb/s	200 Gb/s	1 lane 200GAUI-1	1 pair 200GBASE-CR1	1 pair 200GBASE-DR1	1 pair 200GBASE-FR1		
400 Gb/s	200 Gb/s	2 lanes 400GAUI-2	2 pairs 400GBASE-CR2	2 Pair 400GBASE-DR2			
800 Gb/s	200 Gb/s	4 lanes 800GAUI-4	4 pairs 800GBASE-CR4	4 pairs 800GBASE-DR4	1. 4 pairs 800GBASE-DR4-2 2. 4 λ's 800GBASE-FR4		
	TBD					Over single SMF in each direction TBD	Over single SMF in each direction TBD
1.6 Tb/s	100 Gb/s	16 lanes 1.6TAUI-16					
	200 Gb/s	8 lanes 1.6TAUI-8	8 pairs 1.6TBASE-CR8	8 pairs 1.6TBASE-DR8	8 pairs 1.6TBASE-DR8-2		

P802.3df Motions Requiring Reaffirmation

Session	Motion #	Motion	Referenced File
01-2022	4	Move to adopt the nomenclature in the AUI, BP, Cu cable, MMF 50m and MMF 100m columns of lusted_3df_01_220111.pdf , slide 25	https://www.ieee802.org/3/df/public/22_01/lusted_3df_01_220111.pdf
03-2022	4	Move to adopt PAM4 optical modulation as the basis for all the 200 Gb/s per lane 500m and 2km SMF reach objectives	
05-2022	1	Move to adopt the architecture described in gustlin_3df_01a_220517 as the basis for the logic architecture for IEEE P802.3df	https://www.ieee802.org/3/df/public/22_05/22_0517/gustlin_3df_01a_220517.pdf
05-2022	5	Move to: <ul style="list-style-type: none">• Adopt the nomenclature for the 500m and 2km SMF solutions listed on lusted_3df_02_220602, slide 3	https://www.ieee802.org/3/df/public/22_05/22_0602/lusted_3df_02_220602.pdf
11-2022	3	Move to adopt RS(544,514,10) as the FEC encoding for the 200G/lane AUIs (C2M and C2C)	
11-2-2022	4	Move to adopt differential PAM4 signaling as the basis for all the 200 Gb/s per lane AUIs (C2M and C2C)	

Potential IEEE P802.3dj Timeline



Legend

- ▲ IEEE 802 Plenary
- IEEE 802.3 Interim
- IEEE-SA Standards Board

Key Logic Issues Going Forward

■ Baselines needed!

- **Baselines should address all speeds as applicable (200G – 1.6T)**
- **PCS definition for 1.6T**
 - Must support 100G/lane AUI and 200G/lane PMDs/AUIs
- **FEC definition for 200G/lane AUIs**
 - FEC code choice (RS544? Or other)
 - FEC distribution on 200G lanes (bit muxing or symbol muxing etc.)
- **FEC definition for 200G/lane PMDs**
 - 500m/2km
 - Segmented or concatenated FEC scheme?
- **PCS/FEC definition for 10km PMDs**
 - Depends on IMDD vs. coherent decision
 - If IMDD might leverage 500m/2km work
 - If Coherent, might leverage 40km/802.3cw work
- **PCS/FEC definition for 40km PMDs**
 - Assuming Segmented FEC scheme, leverage 802.3cw work?
- **Where does CR fit into the above?**
 - What FEC is needed?

Key Electrical Issues Going Forward

- **Baseline proposals needed!**
 - Some progress on AUI C2M
- **More channel contributions needed**
 - Channels with OTB architectures
 - Channels representing Near Package Optic solutions
- **Technical considerations to address**
 - AUI interaction with optical PMDs development
 - Reference transmitter and receiver models
 - COM parameters and values
 - Error effects on FEC scheme (segmented and/or concatenated)
 - Test methodologies
 - How to define the test points and where they are located?
 - Package loss
 - CR PHYs
 - Host loss considerations: same or different from AUI?
 - Passive and/or Active cables specifications?

Key Optical Issues Going Forward

■ **Baseline proposals needed!**

- 200G DR1, FR1
- 400G DR2
- 800G DR4, DR4-2, FR4, (LR4/LR1), ER1
- 1.6T DR8, DR8-2

■ **Technical considerations to address**

- BER / Error Models per PMD
- Interaction with AUI development
 - Interop: Optical PMD specs must be independent of host AUI speed
- 10 km SMF PMD - Coherent versus IMDD
 - Two steps: pick a path, refine a baseline
 - Leadership concern: Relative Cost analysis (see next page)
- Potential future topics post-baseline but baseline adoption may need confidence around approach
 - Test methodologies for coherent based PMDs
 - Optical Link Budget Methodologies optimizations
 - SMF Fiber parameter investigation

Regarding Relative Cost Analysis

- Relative Cost analysis is a potential consideration in the 10km PHY debate, but be aware such presentations may require IEEE Risk management review if individuals do not follow guidelines provided in IEEE SA Anti-trust policy available at <<http://standards.ieee.org/wp-content/uploads/2022/02/antitrust.pdf>>.
- Further information about IEEE 802.3 cost discussion can be found in 'Presentation on Cost Discussions to IEEE 802.3 Working Group' <https://www.ieee802.org/3/100GNGOPTX/public/may12/lindsay_01_0512_optx.pdf>.
- Please note that such IEEE Risk management review can take up to ~30 days. Individuals not budgeting sufficient time for review may have presentations scheduled for later meetings to allow these reviews.

Summary

- **Noted business for IEEE P802.3dj TF @ Jan 2023 Interim.**
- **Key future technical issues and baselines for IEEE P802.3dj noted on Slides 8 – 10.**
- **We are a contribution driven organization.**
- **Decisions need to be made!**
- **The future IEEE P802.3dj leadership will continue to monitor progress of overall project and will bring any schedule matters to the attention of the IEEE P802.3dj Task Force to address.**

THANK YOU!

