



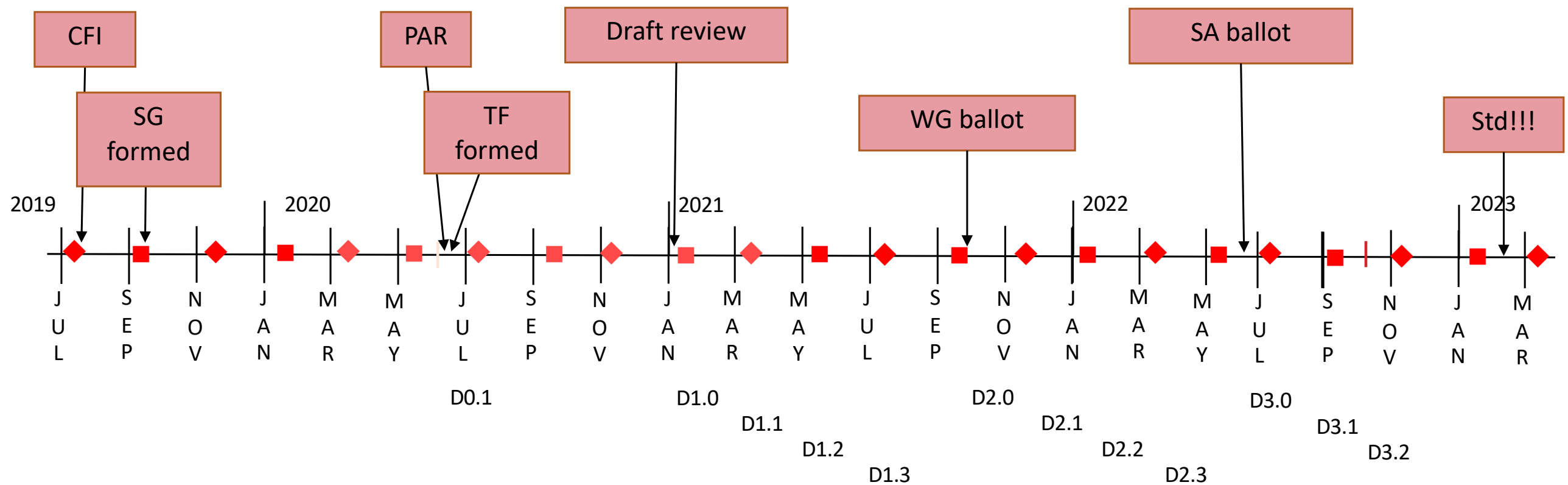
Deadlines and considerations for PMD selection

Rubén Pérez-Aranda, KDPOF

802.3cz timeline



IEEE P802.3cz Multi-Gigabit Optical Automotive Ethernet Timeline (adopted 18 Nov 2020)



https://www.ieee802.org/3/cz/timeline_3cz_01a.pdf

Deadlines definition



- According to 802.3cz timeline, draft D2.0 is scheduled for WG ballot approval at Sept 2021 Plenary meeting
- For WG ballot it is required a technically complete draft consistent with the Project Authorization Request (PAR), Criteria for Standards Development (CSD) responses, and the project's objectives
 - Criteria: Broad market potential, Compatibility, Distinct identity, Technical feasibility, Economic feasibility
 - Balloters will consider if the draft is consistent with both the CSD and our CSD responses when voting to approve the draft. 802.3 will also consider both when voting to reaffirm our CSD responses
- In order to meet with this milestone, a previous technically complete TF recirculation is expected, any changes to pre-submitted draft need to be presented (D1.4)
- Based on it, it is straightforward to define two deadlines required to meet 802.3cz timeline
- **Deadline 1: 1 June meeting**, to provide the information needed for **filling the gaps** considering all the project objectives and take an objective decision of which PMD to use (one per data-rate)
 - Actions to fill the gaps per perezaranda_3cz_01d_0321_pmd_comparison.pdf
- **Deadline 2: 6 July meeting**, to adopt **PMD baseline text** with sufficient information for writing a **technically complete draft**, including **all the data-rates and test methods**
- Adopting a new 802.3cz timeline would require a technical motion (>75%)
- Changing the project objectives is not compatible with current 802.3cz timeline

Deadlines definition — details behind



- 16 September: 802.3 closing
- 6 September: pre-submittal deadline (submit draft at least 10 days prior to IEEE 802.3 meeting)
- 3 September: have D1.4 for preview
- 24 - 31 August: create D1.4
- 17 - 24 August: D1.3 comment resolution
- 28 July - 16 August: TF review
- 6 - 27 July: create D1.3
- 6 July: baseline text for D1.3
- 1 June: PMD selection

Considerations on CSD



- In the following text, rules are in plain text, 802.3cz responses in **green**, observations/history in **pink**, and opinion in **blue**
- Distinct identity:
 - Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.
 - Substantially different from other IEEE 802.3 specifications / solutions
 - **The project may define multiple PHYs, but will define only a single PHY for each rate, media, and link reach combination**
 - **Specification of more than one PMD per data-rate does not meet the distinct identity criterion**
- Technical feasibility:
 - Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the **time frame of the project**. At a minimum, address the following items to demonstrate technical feasibility:
 - Demonstrated system feasibility (**for the intended application**)
 - Proven similar technology via testing, modeling, simulation, etc. (**for the intended application**)
 - Confidence in reliability (**according to levels required by the intended application**)
 - **Study group presentations support link budgets that fulfill automotive requirements at acceptable cost**
 - **Response is supported on link budget analysis and reliability assessments presented for a PMD based on VCSEL+OM3 with clear technology leveraging from other applications**
 - **Most of the identified gaps in perezaranda_3cz_01d_0321_pmd_comparison.pdf are related with technical feasibility**

Considerations on CSD



- Economic feasibility:
 - Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications.
 - Prior experience in the development of other physical layer specifications for Ethernet indicates that the specifications developed by this project will result in a reasonable cost for the specified performance.
 - The study group presentations support the possibility of technology leveraging of existing optical components for the automotive industry.
 - **Prior experience indicates that relative cost of Si-Photonics solutions is much higher than VCSEL + MMF solutions in short reach applications, being this the reason behind many 802.3 projects**
 - **There is no data provided to 802.3cz demonstrating that in the automotive application, where the cost pressure is bigger than in data-ceters, the reality is going to be different within the time-frame of the project, specially taking into account that only single-lane operation is considered**
 - **Technology leveraging for automotive applications has only been demonstrated (link budget, reliability analysis, extreme temperatures experiments) for a PMD based on VCSEL + OM3**

Considerations on WG/SA ballots



- Ethernet is successful in the market because 802.3 specifies interoperability standards of equipment that implements
 - (1) solutions defined by the applications, and
 - (2) only one solution per application (data-rate, medium, link reach)
- Although 802.3 does not specify implementations (e.g. VCSEL, CMOS, Si-Photonics, InGaAs PD) because it is not needed for interoperability definition, 802.3 uses them to define solutions and to write standards that are realistic and implementable
- That means that in the specification you have to take into account a solution that meet every requirement of the application and all the project objectives
- In case of having several potential solutions, **only one** should be chosen as the best one regarding to CSD responses
- During WG and SA ballots, consistency of 802.3cz draft according to previous points is going to be verified

Motion 1

- Motion: to adopt the deadline of 1 June meeting, to provide the information needed for filling the gaps considering all the project objectives and take objective decision of which PMD to use (one per data-rate), per criteria and actions defined in perezaranda_3cz_01d_0321_pmd_comparison.pdf.
- Technical (>75%)

- Move: Rubén Pérez-Aranda
- Second:

Motion 2



- Motion: to adopt deadline of 6 July meeting, to adopt PMD baseline text with sufficient information for writing a technically complete draft, including all the data-rates and test methods.
- Technical (>75%)
- Move: Rubén Pérez-Aranda
- Second:



Thank you!