Channel Operating Margin (COM) for P802.3dv

Howard Heck, TE Connectivity, IEEE 802.3 COM Ad Hoc Chair

Kent Lusted, Synopsys, IEEE 802.3 COM Ad Hoc Vice-Chair

Introduction

- IEEE Std. 802.3 and amendments normatively specify Channel Operating Margin (COM) via equations and methods in Annex 93A and Annex 178A
  - This is the COM specification
- Example implementations of the equations and methods are provided in software code format, the “COM code”
- The COM code is available via IEEE SA Open Source “802-COM” website

Incorporating New Features and Capabilities

- P802.3dv is likely to want/need new features and capabilities for analysis of 400 Gb/s/lane interconnects
  - Including but not limited to: new/improved MLSD, IAE, active media, SILD, skew compensation, bi-di electrical, ETCC, etc.
- There is value in giving the group a chance to consider and use these capabilities for analysis before they are formally committed to an IEEE 802.3 draft specification
- What should be added to the “COM code”?
  - Somewhere between “nothing” and “everything”
  - Broad consensus to add it is key!

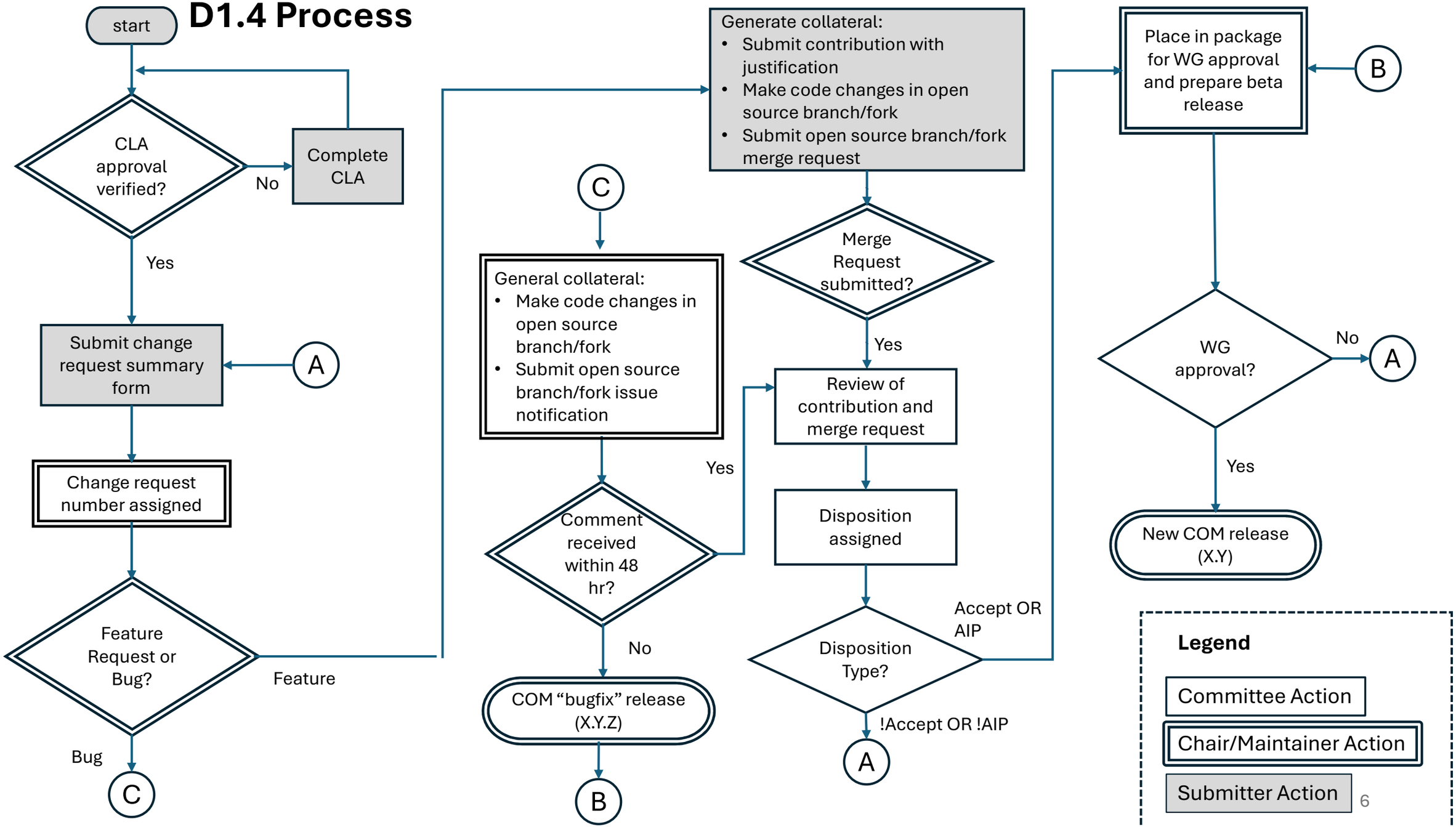
Guiding Philosophy

- If a feature or capability isn't yet in the IEEE 802.3 specification, it shouldn't be in the COM code
  - Until the feature has sufficient consensus from participants or is adopted into a draft amendment
- The rationale:
  - (1) the COM code is, by definition, an example implementation of the equations and methods in the IEEE 802.3 specification or draft amendments.
  - (2) the COM ad hoc's role is to ensure that a proposed feature or capability is correctly implemented in a merge request, not evaluating the merits of a feature/capability
  - (3) minimize the long-term support burden of maintaining many (potentially hundreds) of lines of code for functions that may not ultimately be used

The Path Forward

- Technical proposals for features/capabilities are discussed outside of the COM ad hoc, e.g. P802.3dv Task Force
- Use individual user branches for developing new features
  - Anyone can choose to make their own branch of the code and make that branch public for others to see and use
  - This is the way for people to try out a feature/capability before it is committed to the main trunk
- Feature can be merged into the COM code main trunk when it adopted into the draft specification, or there is sufficient consensus
  - Uses the COM ad hoc merge request process

D1.4 Process


start
CLA approval verified?
No
Complete CLA
Yes
Submit change request summary form
A
Change request number assigned
Feature Request or Bug?
Feature
Bug
C
Generate collateral:
• Submit contribution with justification
• Make code changes in open source branch/fork
• Submit open source branch/fork merge request
Merge Request submitted?
Yes
Review of contribution and merge request
Disposition assigned
Disposition Type?
Accept OR AIP
!Accept OR !AIP
A
C
General collateral:
• Make code changes in open source branch/fork
• Submit open source branch/fork issue notification
Comment received within 48 hr?
Yes
No
COM "bugfix" release (X.Y.Z)
B
Place in package for WG approval and prepare beta release
B
WG approval?
No
A
Yes
New COM release (X.Y)
Legend
Committee Action
Chair/Maintainer Action
Submitter Action

Merge Request Submission Timelines

- Min 5 day notice for submission at a COM ad hoc meeting (meeting #X)
  - Have presentation and the code branch merge request “completed”
    - Merge request is “code freeze”
- Min 14 day review of the code changes before “ballot” (straw poll) for merge decision (at meeting X+1)
  - Accept, AIP (“editorial license”), Reject, Deferred

Summary

- The COM code provides example implementations of IEEE 802.3 equations and methods
- New features need sufficient participant consensus or draft adoption before entering the main trunk of the COM code
- Use public user branches to evaluate proposed features before merging into the main trunk

Thanks!

Useful Resources

- COM code repository on Gitlab
  - Namespace: “802-COM” https://opensource.ieee.org/802-com/
- IEEE 802.3 COM ad hoc website
  - COM development activities are here
  - See: https://www.ieee802.org/3/ad_hoc/COM/index.html
- IEEE 802 Tutorial on IEEE SA Open, March 2025
  - https://mentor.ieee.org/802-ec/dcn/25/ec-25-0088-00-LMSC-2025-mar-tutorial-slides-open-source.pdf

802-COM Change Request Form

- Form contents:
  - DATE:
  - NAME:
  - EMPLOYER/AFFILIATION:
  - E-MAIL:
  - COM VERSION:
  - NEW TYPE (BUG/FEATURE):
  - BRIEF ABSTRACT:
- Submit form contents as follows
  - To: Howard Heck, Chair, IEEE 802.3 COM Open Source
  - CC: Kent Lusted, Vice-Chair, IEEE 802.3 COM Open Source, Rich Mellitz and Adam Gregory, Maintainer(s), IEEE 802.3 COM Open Source