Channel Operating Margin (COM) Code Pathway to Open Source – May Update

Kent Lusted, Intel Corporation

Background

- IEEE Std. 802.3 and amendments normatively specify Channel Operating Margin (COM) via equations and methods in Annex 93A and 178A
  - This proposal would not impact the continued normative specification of COM through equations and methods in Annex 93A and 178A
- There have been and continue to be contributions of software code implementations of these equations and methods for participants to use
- The contributed COM software code implementation is being widely used by industry participants
- It is increasingly important to ensure that the "reference" code implementation is revision controlled, peer reviewed, cross checked, and bug free and maintained over time

Directional Support

- Much of the Q&A on the March Plenary presentation asked about the next level of details

- There was strong consensus within the P802.3dj Task Force to investigate an open source approach for the COM code

Channel Operating Margin (COM) Code as Open Source?

Kent Lusted, Intel Corporation, IEEE P802.3dj Task Force Electrical Track Chair

https://www.ieee802.org/3/dj/public/24_03/lusted_3dj_05_2403.pdf

Straw Poll #10

I would support investigating an open source approach (for example, the IEEE SA BOG Open Source Committee (IEEE OSCom) framework) for the Channel Operating Margin (COM) code.

Results (all):   Y: 68, N: 2, A: 17

https://www.ieee802.org/3/dj/public/24_03/motions_3cwdj_2403.pdf

A Path via IEEE SA Open Source

- Looking into the use of the IEEE SA BOG Open Source Committee (IEEE OSCom) framework for the COM code
  - https://standards.ieee.org/wp-content/uploads/import/documents/other/OSCOM_Operations_Manual.pdf
  - The IEEE Open Source Platform consists of the code and document repositories, license repositories, communication forums, Project management systems, and related administrative and end-user tools maintained by IEEE for the purpose of hosting Open Source Projects together with the associated governance mechanisms, support mechanisms, and other services offered to participants, users, and consumers of Open Source Projects.

IEEE SA Open Source Repo Option

- Hosted by GitLab
  - https://opensource.ieee.org/
- Free IEEE web account to access
- Full suite of tools available to manage:
  - Access and responsibilities
  - Commit or merge requests
  - Forking, branching and merging
  - Issues and problems
  - Security
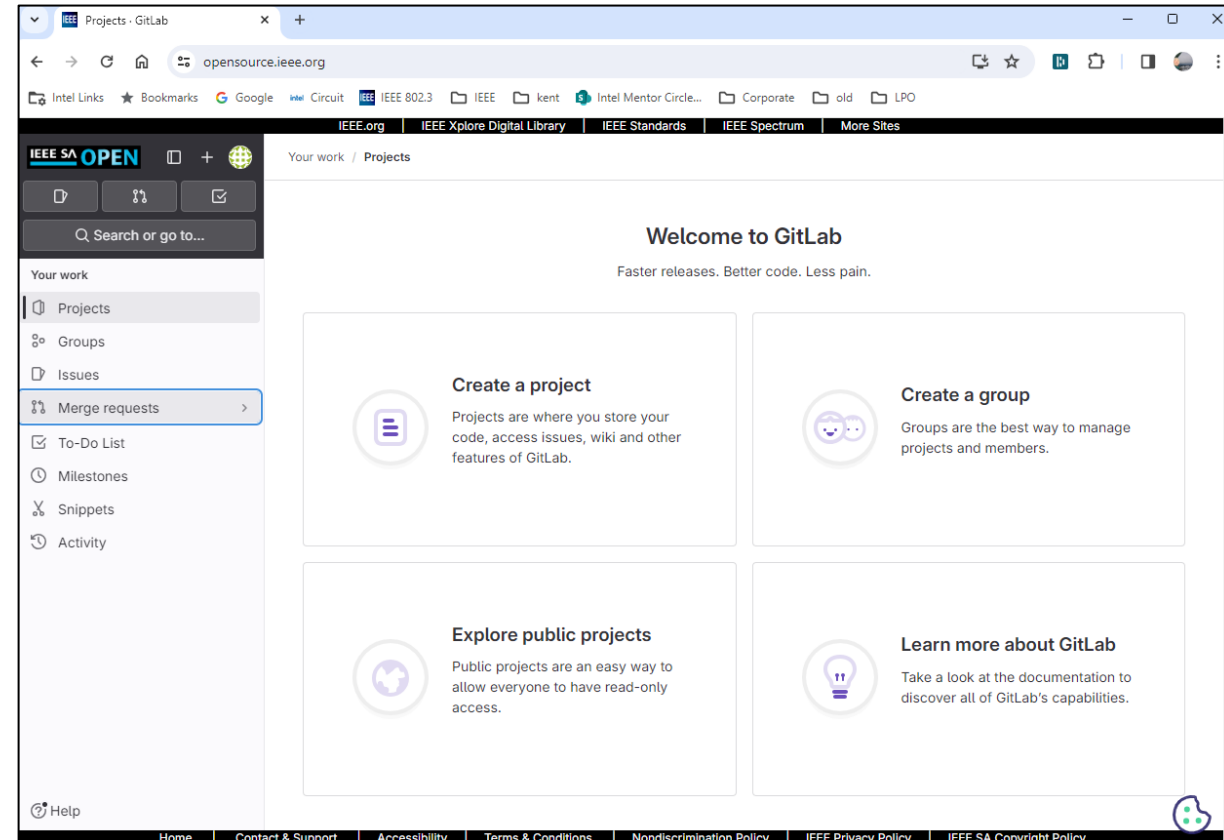
COM Code Work Flows

- There are three predominant workflows of COM that need to be considered in the solution
  - Development - Fast and flexible
    - New features and new capabilities for IEEE 802.3 TF/SG use
    - Align with changes to draft specification, as the spec changes
  - Maintenance - Structured
    - Corrections to existing functions or code related to IEEE 802.3 Std.
    - Stable and "proven" releases
  - Adjacencies
    - Requests for features and capabilities beyond the IEEE 802.3 Std.
    - Workflow for this is TBD
- Developing proposed workflows for these

Migrating COM Code towards Software Development Processes

- The COM code would benefit from using software development processes and procedures

- In the short term, the Task Force can leverage the SW development cycle concepts to improve the quality and accuracy of the COM code
  - If the COM code becomes an open source project, then the contribution, review and approval processes and procedures will need to be created, reviewed, and approved by the stakeholders (TBD)

Proposed *Short-term* COM Code Change Management Guidelines (WIP)

- Managed at the Task Force level via COM ad hoc for the short-term

- Steps
    1. Requests for changes to the COM code are sent to Kent and Rich as a "Commit Request"
        - Brief title, submitter, description of desired change, suggested remedy
    2. Commit Requests are assigned a number associated with the COM version
        - For tracking purposes
    3. Commit Requests are introduced in the COM ad hoc
        - Details are discussed, if time allows
        - Specific code changes are provided to participants by website or reflector (TBD)
    4. Participants review the Commit Request(s) offline between the COM ad hoc meetings
        - Use of the 3dj electrical track reflector is encouraged for discussion and debate on Commit Requests
    5. A straw poll on a Commit Request is taken at a future COM ad hoc meeting to gauge support
        - If there was support, then a Commit Request becomes part of the next formal COM code release

Proposed *Short-term* COM Code Commit Request Dispositions (WIP)

- Managed at the Task Force level via COM ad hoc for the short-term

- Proposed short-term disposition designations for COM code commit requests were leveraged from the IEEE SA Balloting and Comment Resolution Process Guidelines
  - https://standards.ieee.org/wp-content/uploads/import/governance/revcom/guidelines.pdf
- Disposition Designations:
  - **Accepted:** The group agreed exactly with the commit request and change proposed by the submitter.
  - **Revised:** The group agrees with the commit request (at least in part) and implements a change that is not exactly what the submitter proposed.
  - **Rejected:** The group does not agree to make the change, or cannot come to a consensus to make changes necessary to address the commit request
  - **Deferred:** The group is unable to review or implement the commit request within the specified timeline for the next release
  - **Incomplete:** The commit request is missing details.

Positive Effect of Processes

- Already seeing benefit from applying these constructs and methods
- 8 commit requests were submitted against COM v4.4
  - Initial 4 requests were submitted
  - Beta version was provided
  - Peer review resulted in 4 additional requests
  - 2 more beta releases were provided
    - 4.5beta3 -> v4.5
- Received 4 new commit requests against COM v4.5 at this meeting
  - Details will be posted to the COM ad hoc website soon

Summary

- The normative COM specification remains the equations and methods in Annex 93A and 178A
  - This proposal would not impact the continued normative specification of COM through equations and methods in Annex 93A and 178A
- Going forward, we need to ensure that the COM "reference" code implementation is revision controlled, peer reviewed, cross checked, and bug free and maintained over time
- IEEE SA Open Source is one viable option
  - Working towards a solution proposal at the July 2024 Plenary
- Three workflows with different requirements
  - Embracing all
- Short-term change management guidelines and dispositions are already having a positive influence to the COM code development

Thanks!