

As Announced, meeting will start at 9 am  
Tuesday and also Wed.

# Agenda and General Information

IEEE 802.3  
Backplane and Copper Study Group  
“CU4HDDsg”

Yong Kim, Broadcom, SG Chair,  
Dallas, TX, USA,  
November 10, 2015

# Agenda

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- Welcome and Introductions
- Appointment of Recording Secretary
- Approve Agenda.
- Approve Minutes – Deferred till Wed
- Goals for this meeting
- Big Ticket Items
- Reflector and Web
- Ground Rules
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - IEEE Standards Process
- Liaisons and Communications
- ~~Review of Action Items~~
- Presentations (slide 26) – including late submissions (noted in red text)
- Motions and Closing Business
- Future Meetings

# Study Group Decorum



- Photography or recording by permission only (December 2014 IEEE-SA Standards Board Ops Manual 5.3.3.2)
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (December 2014 IEEE-SA Standards Board Ops Manual 5.3.3.3)
- Cell phone ringers off
- Wear your badges at all times in meeting areas
  - Help the hotel security staff improve the general security of the meeting rooms
  - **PCs HAVE BEEN STOLEN** at previous meetings
  - **DO NOT** assume that meeting areas are secure
- Please observe proper decorum in meetings

# Goals for the meeting

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- Develop required documents for 2.5G/5G Backplane and Copper Study Group (CU4HDDsg) to move forward to a task force.
  - IEEE-SA Project Authorization Request (PAR)
  - Responses for the CSD (Criteria for Standards Development, includes previously known 5 criteria).
  - A set of objectives for the project
- Review presentations that are relevant and help to form consensus for the above.
  
- Lay the ground work for the next meeting

# Reflector and Web

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- To subscribe to the 802.3 2.5 Gb/s and 5 Gb/s Backplane and Short Reach Copper study group (“CU4HDD sg”) reflector, send an email to:

[ListServ@ieee.org](mailto:ListServ@ieee.org)

with the following in the body of the message (do not include “<” or “>”):

```
subscribe stds-802-3-CU4HDD <your_first_name> <your_last_name>  
end
```

- Send <<*Study Group name*>> reflector messages to:

[stds-802-3-CU4HDD@listserv.ieee.org](mailto:stds-802-3-CU4HDD@listserv.ieee.org)

- Study Group web page URL:

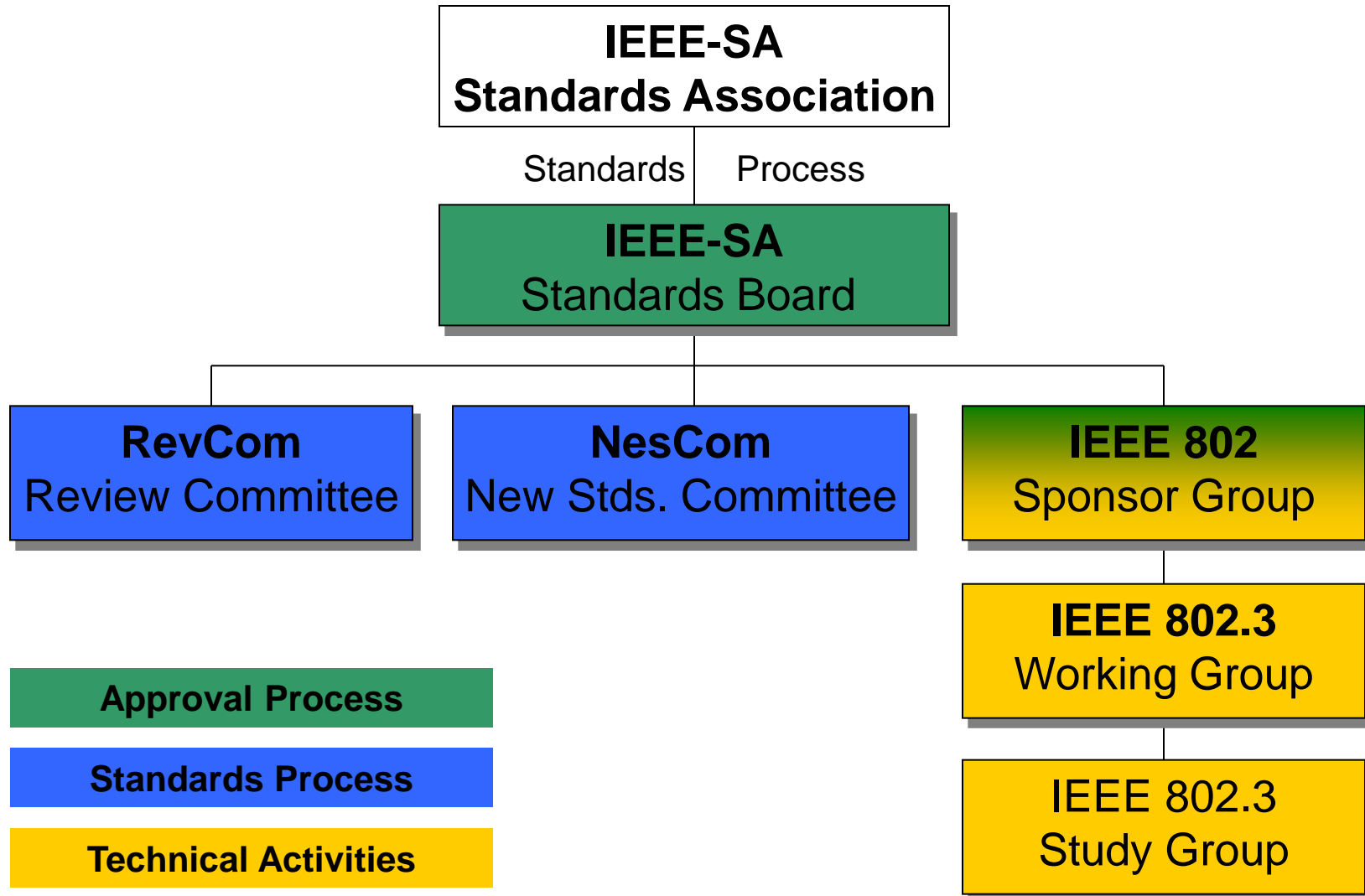
<http://www.ieee802.org/3/CU4HDDSG/>

# Ground Rules

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- Based upon IEEE 802.3 Rules
  - Foundation based upon Robert's Rules of Order
  - Anyone in the room may speak
  - Anyone in the room may vote
- **RESPECT**... give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
  - This includes costs, ASPs, etc. no matter what the currency
- NO restrictive notices

# IEEE Structure



# Important Bylaws and Rules

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- **IEEE-SA Operations Manual**  
[http://standards.ieee.org/develop/policies/sa\\_opman/](http://standards.ieee.org/develop/policies/sa_opman/)
- **IEEE-SA Standards Board Bylaws**  
<http://standards.ieee.org/develop/policies/bylaws/>
- **IEEE-SA Standards Board Operations Manual**  
<http://standards.ieee.org/develop/policies/opman/>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Policies and Procedures**  
<http://standards.ieee.org/about/sasb/audcom/pnp/LMSC.pdf>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual**  
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group (WG) Policies and Procedures**  
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802.3 Working Group Operating Rules**  
[http://ieee802.org/3/rules/P802\\_3\\_rules.pdf](http://ieee802.org/3/rules/P802_3_rules.pdf)



# Guidelines for IEEE-SA Meetings

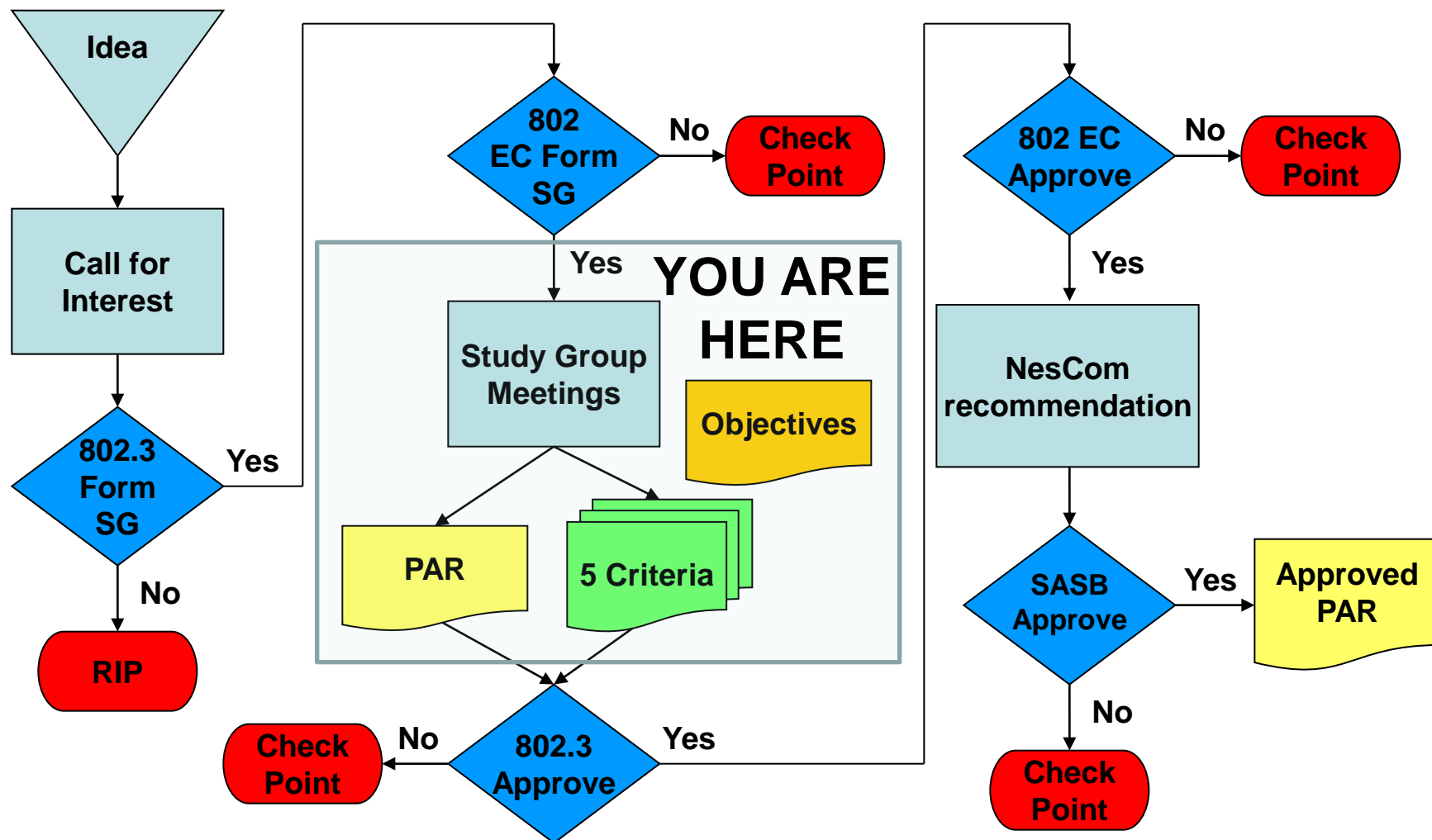
- All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
- Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
- Don't discuss specific license rates, terms, or conditions.
  - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
    - Technical considerations remain primary focus
- Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
- Don't discuss the status or substance of ongoing or threatened litigation.
- Don't be silent if inappropriate topics are discussed... do formally object.

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If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association’s Antitrust and Competition Policy” for more details.

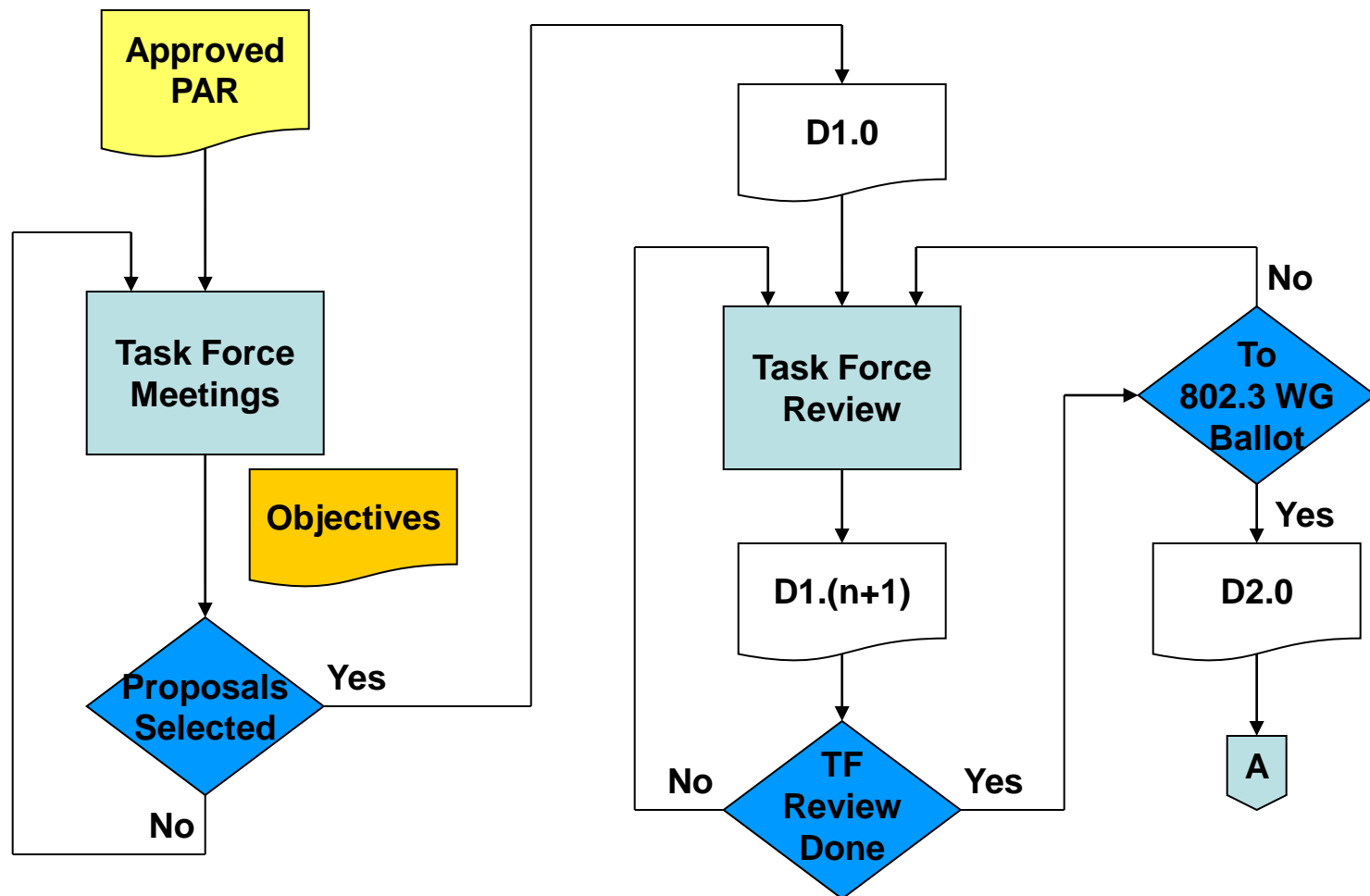
This slide set is available  
at <https://development.standards.ieee.org/myproject/Public/mytools/mob/preparslides.ppt>

# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

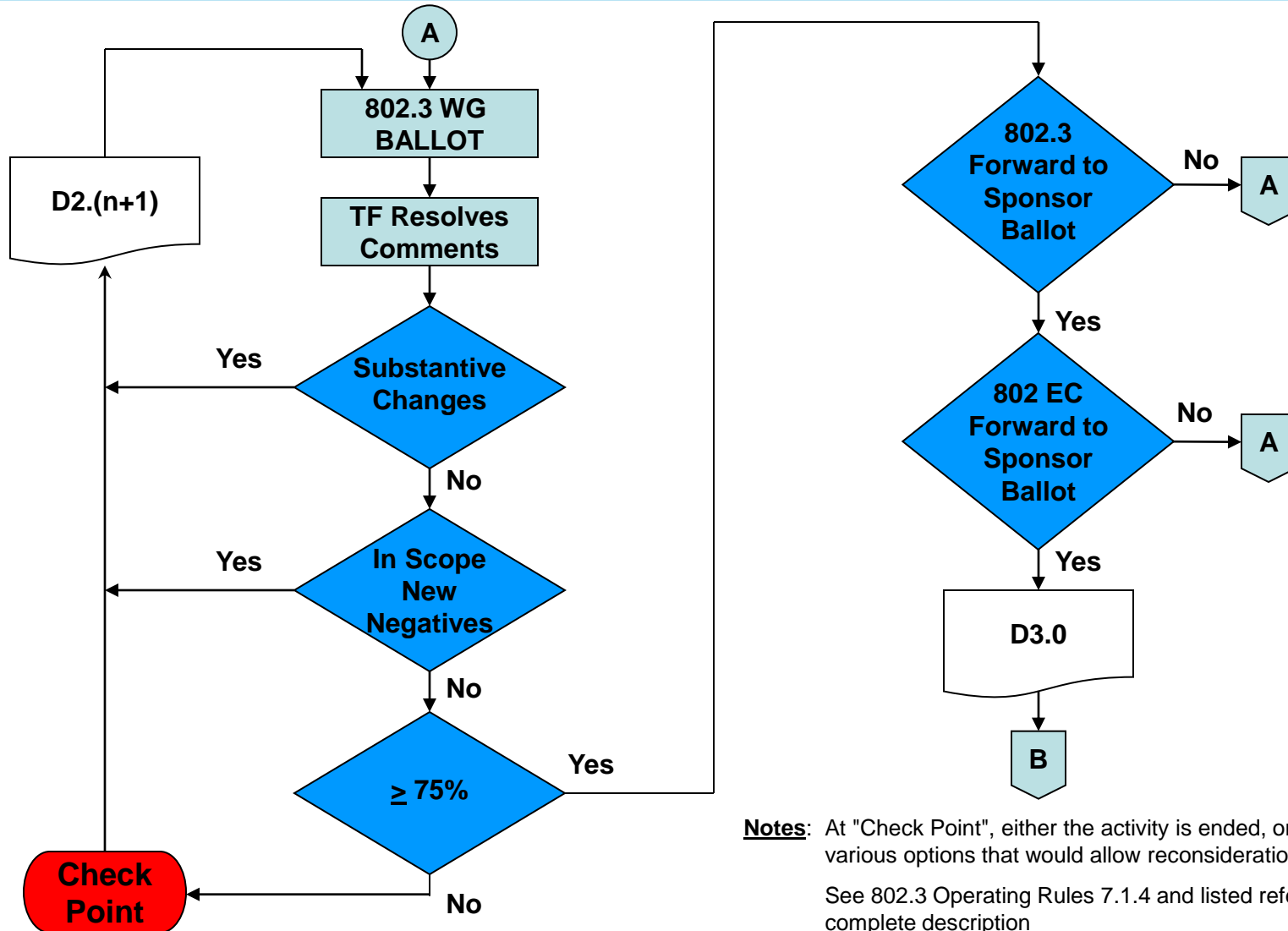


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

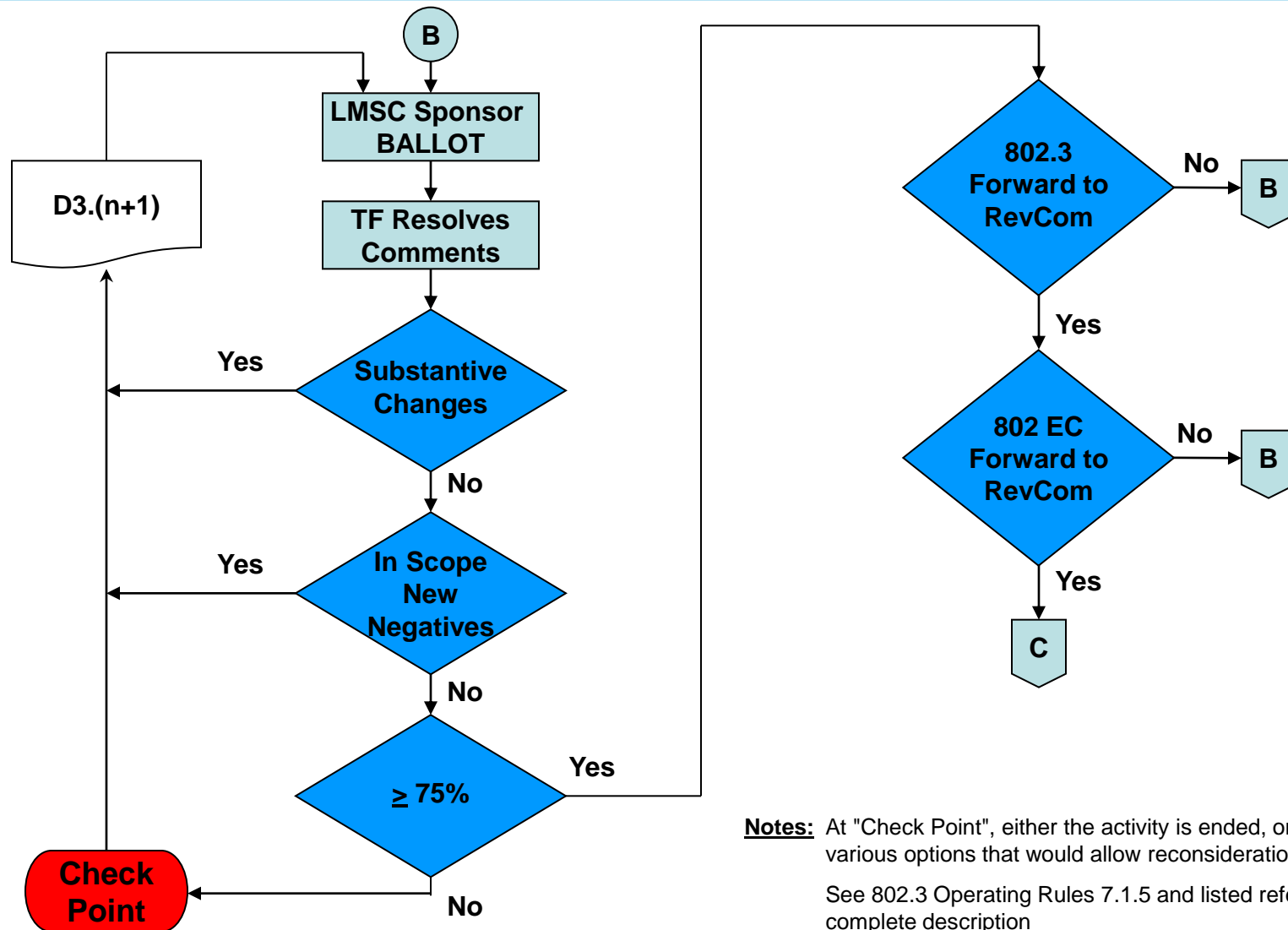
# Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase



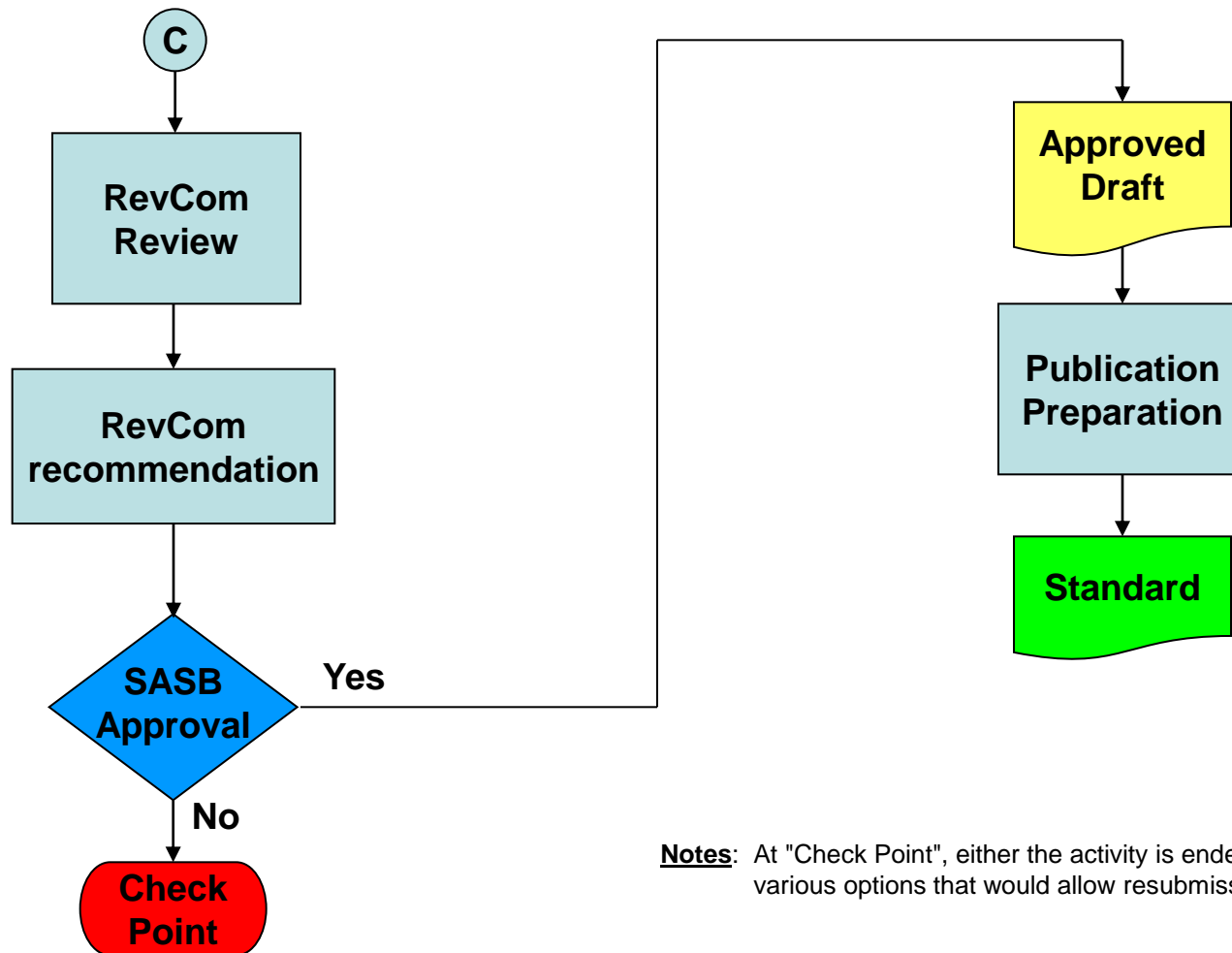
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



# Overview of IEEE 802.3 Standards Process (5/5) – Final Approvals / Standard Release



**Notes:** At "Check Point", either the activity is ended, or there may be various options that would allow resubmission for approval.

# The Study Group

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- Normal function is to draft a complete PAR and Five Criteria
- Provide a plenary week tutorial to the LMSC.
- Gain approval at the IEEE 802.3 WG, IEEE 802 EC, IEEE-SA NesCom and IEEE-SA Standards Board.
- SG only exists for 6 months
  - Extensions can be requested
  - Voted on by IEEE 802.3
  - Ratified by IEEE 802 EC
- Development of Objectives helps set the goals for the Task Force
- Consensus required to move forward
- Not a goal – choosing a solution.

# Crash course on Study Group Goals

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- For an excellent overviews of the Study Group activities please refer to:
- Overview of the Process – Wael Diab  
[http://www.ieee802.org/3/400GSG/public/13\\_05/diab\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/diab_400_01_0513.pdf)
- Review of the 5 Criteria – Howard Frazier  
[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_01_0513.pdf)
- Guidelines for Project Objectives – Howard Frazier  
[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_02\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_02_0513.pdf)
- The following slides are taken from these **excellent** presentations **above**,  
AND  
these “crash course” slides references are taken from Mark Norwell's 25G  
Agenda slides, [http://www.ieee802.org/3/25GSG/public/Sept14/agenda\\_25GE\\_01\\_0914a.pdf](http://www.ieee802.org/3/25GSG/public/Sept14/agenda_25GE_01_0914a.pdf)



# From Overview of the Process – Diab

[http://www.ieee802.org/3/400GSG/public/13\\_05/diab\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/diab_400_01_0513.pdf)

## What does the Study Group produce?

- 5 Criteria
  - Broad Market Potential, Compatibility, Distinct Identity, Technical Feasibility, Economic Feasibility
- PAR
  - Your “contract” with the IEEE-SA and “authorization” to develop a standard
  - Broadly focuses on what the standard is that group will work on including scope, purpose, broad timeline (not a project plan)
  - Good idea to look at examples of prior projects
- Objectives
  - Your “contract” with 802.3
  - At a high level it is what the group will work on (and what it will not)
  - Somewhat more specific than the scope in the PAR

# From Overview of the Process – Diab

[http://www.ieee802.org/3/400GSG/public/13\\_05/diab\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/diab_400_01_0513.pdf)

## Final Thoughts...

- Goal is to get to a Task Force
- To do that, focus on...
  - Producing the objectives
  - Producing the PAR
  - Producing the 5 criteria
  - Work on building consensus...
  - Leave the rest of it to the Task Force phase...
    - Plenty of time to work on solutions
    - Plenty of time to debate the text of the solutions

# From Guidelines for Project Objectives – Frazier

[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_02\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_02_0513.pdf)

## History and traditions

- Project objectives are brief statements, usually written in bullet form, that summarize the technical objectives for a standards project in IEEE 802.3
- They represent a distilled set of high-level technical requirements
- They are created by the study group, approved by the parent working group, and are fulfilled by the task force
  - The task force may modify them, with the approval of the working group
- They typically address areas such as operating speed (bit rate), media, reach, BER, compatibility, impairments, coexistence
- Note that some other working groups address such areas in their Project Authorization Request, but we tend not to do this
- Every project undertaken in the IEEE 802.3 working group since (at least) 1992 has been guided by a set of objectives

# From Guidelines for Project Objectives – Frazier

[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_02\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_02_0513.pdf)

## Guidelines for writing and adopting

- Consensus building is key
  - Don't even think about offering up a motion to adopt an objective until you know you have significant support for it, otherwise, things will get ugly
- Offer objectives one at a time, using a motion like this:
  - **Example - for illustrative purposes only!**
    - Move that the Study Group adopt the following objective:
      - Provide a BER of  $10^{-12}$  or better at the MAC/PLS service interface
- All votes on objectives are technical, requiring  $\geq 75\%$  approval
- Sometimes, we trying adopting just the form of an objective, before we can reach agreement on the specific values
  - These are called “Mad-libs” objectives
    - **Example - for illustrative purposes only!**
      - Move that the Study Group adopt the following objective:
        - Provide a BER of  $10^{-n}$  or better at the MAC/PLS service interface
      - This is not the preferred approach!

# From Guidelines for 5 Criteria (CSD) – Frazier

[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_01_0513.pdf)

## Audience

- The 5 criteria are drafted and approved by a study group
- They are reviewed and approved (individually) by the working group
- They are subject to review and approval by each and every other working group in IEEE 802®
- They are reviewed and approved by the IEEE 802 executive committee

# From Guidelines for 5 Criteria (CSD) – Frazier

[http://www.ieee802.org/3/400GSG/public/13\\_05/frazier\\_400\\_01\\_0513.pdf](http://www.ieee802.org/3/400GSG/public/13_05/frazier_400_01_0513.pdf)

## Purpose

- The 5 criteria are used to evaluate proposed projects
- They are used to filter out projects that are not appropriate for standardization in IEEE 802
- They are unique to IEEE 802
- They are one of the reasons why IEEE 802 standards are relatively successful
- They help perpetuate the “IEEE 802 culture”

# Attendance

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- Tutorial Material on attendance tool
  - [http://ieee802.org/3/minutes/attendance\\_procedures.pdf](http://ieee802.org/3/minutes/attendance_procedures.pdf)
- Access details
  - URL: <http://imat.ieee.org/>

# DRAFT Presentation Agenda

Title	Post Date	Authors(s)	Affiliation
Agenda & General Info	Nov 9, 2015	Yong Kim	Broadcom
Arch Ad Hoc Report	Nov 9, 2015	Yong Kim	Broadcom
<a href="#">CU4HDD Backplane Channel Analysis</a>	Nov 5, 2015	Peter Wu	Marvell
<a href="#">Analysis of SAS 6Gbps Backplanes Using Annex 69B of 802.3</a>	Nov 5, 2015	Anthony Calbone	Seagate
Potential Timeline	Nov 9, 2015 Late	Yong Kim	Broadcom
"HDD BW/throughput observations"	Nov 10, 2015 Late	Thomas Skaar	Seagate



# DRAFT Schedule

## November 10<sup>th</sup> (Tuesday) – coffee breaks TBD

- 09:00 – 45min – Welcome, Agenda & General Info (refer to Slide 2)
- 09:45 – 15 min -- Arch Ad Hoc Report
- 10:00 – 15 min – IEEE 802 comments (partial) received (deadline is 5 pm Tuesday).
- 10:15 – 45 min – [CU4HDD Backplane Channel Analysis](#) Peter Wu
- 11:00 – 45 min – [Analysis of SAS 6Gbps Backplanes Using Annex 69B of 802.3](#)  
Anthony Calbone
- 11:45 – 15 min – Potential Timeline (if allowed), Yong Kim
- 12:00 – 30 min – Objectives Review
- Lunch Break (or finish w/o lunch and adjourn for the day).
- 01:30 – nn min -- Big Ticket Items discussions on PAR, CSD, Objectives

## November 11<sup>th</sup> (Wednesday) - coffee breaks TBD

- 09:00 – 60+ min – IEEE 802 Comment to PAR & CSD response  
Revision to PAR, CSD, Objectives as appropriate.
- 10:00 – 30 min – Back up Slide generation if appropriate (RE: Comments).
- 10:30 – 30 min – PAR, CSD – discussions and entertain motion to request 802.3 approval
- 11:00 – 30min – Objectives - discussions and entertain motion to request 802.3 approval
- 11:30 – nn + Open Actions & Topics,

**NOTE: PLEASE DO NOT ASSUME WE WILL BE DONE BY LUNCH TIME UNLESS CONFIRMED TO BE SO.**

# Future Meetings

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- See: <http://www.ieee802.org/3/interims/index.html>, & <http://www.ieee802.org/meeting/index.html>
- Architecture Ad Hoc meetings (mostly conference calls)
- 2016 January Interim ← 1<sup>st</sup> TF meeting if 802.3cb PAR is approved.
  - Atlanta, GX, **USA**
  - January 18~22, 2016
- 2016 March Plenary
  - Macao SAR, **P.R. China**
  - March 14~17, 2016
- 2016 May Interim
  - TBD, TBD, **<North America>**
  - May 23~27, 2016
- 2016 July Plenary
  - San Diego, CA, **USA**
  - July 25~28, 2016
- Anyone interested in hosting a interim meeting, contact me, or the IEEE 802.3 Executive Secretary [Steve Carlson](#).

# Comment on PAR, CSD

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- From 802.15 - James Gilb
- 802.3cb
- -General question: With wireless standards, we often specify a target operating range. Is there a reason why a target distance is not specified for this standard? It seems that the stakeholders would have some expectation of the backplane distance or copper twinax length over which this standard can reliably deliver the advertised data rate. This distance should be stated in the scope.
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- CSD
- Compatibility: This 5C states that "shall be compatible with 2.5 Gb/s and 5 Gb/s MAC operation being defined in IEEE P802.3bz". If so, then the PAR (5.3) should reflect that this standard depends on the completion of IEEE P802.3bz.
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# Thank You!