

July 2022 EC Workshop Report

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Introduction

The workshop scope included looking at the future in three broad areas:

- how 802 is organized and how the various working groups (WGs) in 802 relate to each other
- What has been learned from the hybrid meeting experience in July
- Considerations for how 802 meets in the future

The workshop forum is an interactive discussion among participants intended to inform and advise 802 leadership on operational considerations. The workshop did not develop technical content or conduct any standards development work. The scope does not include decision making, but rather, it is intended to share information via discussion and collect information so as to provide the Executive Committee (EC) a sound basis for future decisions.

The output of the workshop is this report, which includes action items for follow-up.

Overview

802 Architecture and technical coherence

A technical plenary¹ was held on 11-July-2022 which raised issues that require follow-up work. The purpose of this discussion was to consider actions moving forward.

Much of the discussion was around articulating the value of having a common architecture. We need a clear definition of the value proposition for technical coherence across 802 to define clearly problems we need to solve.

There was discussion of the history of the 802 architecture and how things have changed. The diversity of use of 802 standards has grown substantially and some concepts currently considered as architecture and technical coherence do not apply equally well to all standards. Where we once had the idea of a unified LLC, this is not so clear today. The ecosystems which have grown around 802 standards may provide some or much of the value once provided by the common LLC (example given is use of IP routing instead of layer 2 bridging in heterogenous networks). The ability to provide solutions across different kinds of connectivity is what we do in 802. The conclusion of this thread was that the value of a common LLC requires further discussion.

There was extensive discussion on what we mean by “802 as a family of standards” and if the meaning of the 802 as a brand is recognized in the marketplace. 802 standards are used in many different markets. The meaning of the brand may be different in each. We should not assume there is one 802 branding. There were many differing opinions on the meaning of 802 branding.

More detail can be found in the appendix.

Improving technical exposure and collaboration between WGs

The discussion focused on potential organization changes for 802 to promote better awareness of working group (WG) activities by other WGs in order to promote greater collaboration and technical coherence.

There was a lot of discussion of silos both between WGs and with individual project/task areas. There wasn't general agreement that silos were a bad thing – on the plus side they provide focus and a reason for people to come to 802. Many observed that silos have always been with us but that the changes during the pandemic have perhaps exacerbated separation of work and added concerns of voting becoming dominated by people who may not have seen the breadth of a working group's activities. Moving forward, this led to a desire to ‘invite them to the buffet’ – to better use the tools at our disposal (e.g., tutorials, the technical plenary, liaison reports, invited presentations, and even cross-WG liaisons) to report on activities happening across task groups and working groups. There was agreement to allocate a tutorial slot in November to try to give some overview of the technical work and broad markets that 802 covers.

Additionally, there was concern that a participant motivated to learn about 802 might have difficulty doing so. There is no ‘general guidebook’ to all things 802, and one might help – but no one really seemed to have the time, bandwidth, or charter to put one together. Additionally, the remark was that across the organization, websites might be made easier to follow – but we don't want to add to the

¹ The presentations used during the technical plenary are available here: <https://www.ieee802.org/Tutorials.shtml>

chairs'/webmasters' workload in the process. Both of these were left as projects without a champion and may be fruitful if either could find one.

Additionally, there was a lot of discussion of the importance of mentorship. Often, personal contact with an experienced 802 member helps to bring in and connect new parties with the broader work. It was recognized that the EC members are not your 'typical member', as well as that with a return to in-person meetings from the past two years of virtual meetings we are bringing in a large number of people who have never seen the bulk of 802 operate. Learning from them, as well as connecting them to 802 as we transition back is an opportunity. To capitalize on it, though, will require personal interaction and mentorship from individuals involved. Members of the EC should consider this a challenge, and, if possible, encourage other experienced participants in their WGs to mentor newcomers interested in deeper participation.

More detail can be found in the appendix.

Hybrid experience feedback

Overall, the experience reported from the Montreal hybrid meeting was positive, and individuals stated that hybrid meetings were probably here to stay for some time. There were a number of common themes for what went well and what might be done to improve. These included the following:

- Having extra help dedicated to managing the queue and remote logistics (e.g., A/V, monitoring conference tool audio, etc.) was extremely helpful. This was sometimes done with volunteers, sometimes with extra helpers, such as students.
- Preparation by and training of group leaders was very helpful.
- Having a dedicated conference tool computer helped as well. There was a request for 802 to consider providing a setup.
- Predictability and consistency in setups help eliminate issues.
- Reports from remote participants suggested that rooms where there was targeted video, e.g., pointed at the floor microphone, was helpful.
- There was a request for more wireless microphones – particularly in smaller rooms where individuals were seated around a large table. Smaller rooms might benefit from a speakerphone or 'owl-like' device.
- There was a desire to use voting tools that made the voting more transparent – so that real-time results could be seen.
- Some rooms had everyone on the conference tool (listen only), and found it contributed to the meeting. Others struggled with audio issues due to open speakers into the room mic. In-room conference tool access should be supported, but not required. As the experience of different subgroups was very different the group should decide what is best for the group.

More detail can be found in the appendix.

Near-term future meetings - Preparations for November

The discussion on what to try in November began with the recognition that we were already well along with planning with the venue. Our opportunities were limited. It was unlikely that we would be able to provide a computer for each room or a dedicated head table monitor. Things that could be arranged either by the participants (e.g., group chairs) or by arranging the room layout (e.g., arranging so the head table could see the screen) were likely to be achievable.

Based on lessons learned, there was a desire that the medium and large rooms needed audio monitors for the head table, as well as wireless microphones for questions from the floor. There was a desire to provide a video feed from the larger rooms, showing the speaker either in the question queue or the presenter. Additionally, rooms should be sound checked for acoustics prior to the start of the meeting.

While it is unlikely that a room computer could be provided, best practices were to encourage group chairs to arrange for a dedicated computer running the conference tool and bridging to the projector. To the extent possible, it was also desirable to keep other equipment consistent from room to room, including sound mixers and audio arrangements.

Finally, and importantly, there was general agreement that those meeting chairs who attended the training had fewer problems, and that meetings could benefit by having everyone on the conference tool (without an audio connection) provided that adequate discipline was maintained. There was agreement to debrief after the Bangkok meeting to arrange longer-term plans.

More detail, and a list of comments to add may be found in the appendix.

Future meeting structure: review of 2020-21 experience

There was extensive discussion regarding the experience since 2020. There are views that remote worked well and views that it did not work well. There were advocates for remote-only meetings in the future, and for returning to in-person only attendance in plenaries and interim sessions. There was general agreement that retaining a remote attendance option for in person meetings will be needed for the immediate future, at least through November and likely through March of next year.

General agreement that Definitely needs much further discussion and investigation: We need to develop metrics for success and productivity and a system view of cost/benefit.

The polarization tended to differ depending on the type of work the participant is primarily engaged with in 802. There was some agreement that certain functions of 802 work very well remote. An example given was 802 EC meetings. Other activities have been greatly slowed or stalled without in-person meetings. Various stages of standards development were given as examples.

A point made several times is that 802 was benefited greatly from the momentum of having established relationships among participants, built over many in-person meetings. It was even asserted that we're running on borrowed time as we may lose that momentum. New participants joining 802 do not have the benefit of prior experience and relationship building. The EC works without in-person meetings "because we know each other".

In some groups, later stages such as comment resolution continued to progress well, while earlier stages of the projects went far more slowly. In some groups even the later states (e.g. comment resolution) were severely slowed. Experience varied greatly.

There was extensive discussion on revising the schedule of in-person EC meetings. Consensus was reached that fewer in-person meetings could be adequate. Less consensus on what the correct number may be. One suggestion was one EC meeting per year at a plenary. Others felt no in-person meetings were needed. It was noted that rules suspension was required to make remote EC meetings function,

and that if the general agreement is to shift more or entirely to remote, we should revise the rules accordingly

Another comment regarding the EC functions was that “remote works well until it doesn’t”. Sometimes a problem can be much more readily solved meeting in person. This point was debated.

What we’ve learned from 2020-2022.5:

Remote meetings schedules can be more flexible. Many groups routinely have virtual meetings between plenary and interim sessions. It was generally agreed we need these in-between working meetings. It was noted that there is no ideal time zone and that the “not awful everywhere” time around 0900 ET is very, very saturated with meetings. More frequent meeting can be good, or not.

The virtual only plenary and interim sessions spread over 2-weeks worked well early on, as many other competing activities were also suspended. As other activities have resumed, the “spread out” schedule is less convenient for some. Another view is that “spread out” enabled people to participate in more than one WG more effectively.

There was considerable discussion about costs to 802 and to attendees of remote, in-person and hybrid. A common theme was that there are many ways to measure cost and benefits. What is instantaneously cheaper may cost more overall, in terms of personnel costs and time to project completion. Time and productivity costs harder to measure and expose to accountants.

Overflow/New Topics that came up

There was discussion regarding the role of the wireless working groups (802.11, 802.15 and 802.190 with respect to coexistence. Wireless coexistence is increasingly critical to effective access to spectrum. Distinctly different views were expressed. Several very different definitions of what “positive coexistence” means were expressed. Also different views as to what type of role 802 should take.

One view is that 802 should take a proactive, positive role in developing effective coexistence strategies. Another view is that this should be left to other industry groups. It was noted that historically 802 has been able to positively influence both industry practice and regulator response.

It was noted that there is more to the wireless world than 802 standards. Again different views were expressed, ranging from “there’s nothing we should do” to pointing out the history of positive relationships between 802 and other industry organizations and SDOs.

There was considerable discussion on the role of 802.19. Two divergent views were repeated:

- 802.19 is “like mother” of the 802 wireless family and not the place to work on coexistence issues
- 802.19 is “like the family room” and exactly the right place to work on coexistence solutions

While these divergent views were not converged, there was some agreement that the main wireless WGs should work more closely together on coexistence.

An example given of a positive impact is 802.19.3. This recommended practice greatly helped achieve rule changes in Japan that have enabled sub-1GHz 802.11ah operation.

There was further discussion and debate on what responsibility wireless WGs should assume to consider and promote positive coexistence, without much agreement. It was noted that we have multiple different coexistence cultures in 802.

Action Items

1. Architecture and Overview:
 - a. Action: Gather the terminologies we have, identify commonality and differences, and then recommend a course of action
 - b. Assigned: 802revC editor
2. Question: Is it important for the 802 technologies to work together at the MAC service level? Need to document benefits of having a common 802 layer, cost of not having 802 technologies converge at the MAC service level.
 - a. Action: Arrange and advertise a meeting to further discuss and develop a plan
 - b. Assigned: 802.24 Chair
3. Market assessment of areas that have a requirement for multiple MAC/PHYs working together. Those can benefit from a converged MAC layer. Can request IEEE Staff to assist
 - a. Action: Discuss with IEEE staff
 - b. Assigned 802.24 Chair
4. Using the tools we have more to promote more inter-WG collaboration and coordination: e.g. using tutorials to share
 - a. Action: Sponsor November tutorial with the topic “Working group and TAG status reports”
 - b. Assigned: David
5. Liaison reports among Working Groups to share with all other working groups
 - a. Action: Commence making such reports at working group meetings
 - b. Assigned: all WG chairs
6. Discussion on importance of mentoring: need a proposal to foster mentoring
 - a. Action: review new participant orientation materials for what is missing and develop a proposal for mentoring
 - b. Assigned: Subir and Edward
 - c. Action: Assemble a FAQ for new leaders
 - d. Assigned: Subir, Edward and John D
7. Hybrid meetings and future meetings
 - a. Action: Publish the notes and experiences captured during the workshop discussion and convene a meeting of near-term mixed mode ad hoc to review and make small recommendations for November.
 - b. Assigned: George
8. Next workshop: Timeframe is November/December 2023.
 - a. Action: Investigate options (1) hold following November plenary (2) holding at IEEE headquarters and (3) other options, and report to EC.
 - b. Assigned: Jon R.

Appendix A: Details of the discussions

This section is a composite of the notes provided by the workshop organizers assisted by the 802.11 chair who provided notes.

802 Architecture and technical coherence

More details from the discussion:

- We need a clear definition of the problem(s) we need to solve and clear value proposition for technical coherence across 802.
- What does do we mean by 802 as a family of standards?
 - It was noted that 802 is a recognized brand in many markets. The brand identity, and what this means to inside and outside 802 was discussed.
 - When we ask “what is IEEE 802” we get varied answers
- An analogy offered is that 802 is a family so much as a collection of roommates occupying the same space.
 - Are we a family or roommates and what is the difference?
 - We have become a diverse group with different ties and relationships.
- Another view offered is that 802 standards were once united by a common LLC
 - This led to discussion of the value and relevance practicality of a common LLC.
 - It was noted that extensive ecosystems have evolved around 802 standards, and that the goals of a common LLC may be being met in other organizations in the ecosystem.
 - We left with the question “Is the LLC idea is obsolete?” as a follow-up topic.
- IEEE 802 as a recognized as a brand:
 - It was noted we should not assume that there is one recognized 802 brand
 - With the diversity of standards, the brand 802 can mean different things to different people, industry sectors, or external groups.
- Discussion on the goals of having an 802 architecture;
 - Has IP and other things made the idea obsolete? Heterogeneous networks using multiple 802 technologies exist using sets of layer 3 protocols (IP) thus enabling cross-technology information exchange.
 - Discussion wandered into the the exact meaning of an 802 architecture and if a common architecture can really fit the diverse needs and massively wide application of 802 standards.
- Market segment view:
 - The ability to provide solutions across different kinds of connectivity is what we do in 802
 - But is “bridging” really providing that connectivity?
 - Is this MAC level / level 2 view “it”?
 - Need to document the cost/benefit:
 - What is the alignment with a common model
 - When does the benefit become visible?
 - When does the benefit become realized?

- We are not a marketing organization. We are part of an ecosystem that includes marketing and take that responsibility (a wireless view – Dorothy)
 - Relating this back to the family model: the children have grown up and become who they are independent of what we want them to become: meaning that industries have adopted standards, built up ecosystems around them, and matured. This suggests the current model has been successful.
 - It is noted that our success so far should not be presumed to mean it has been the most effective model nor that it will continue to work.
- Imposing a “common” anything vs provide a supporting framework:
 - A bottom-up approach often works better than a top down ideal
 - Embracing diversity in implementation domains is critical
 - Diversity in participation brings huge value
 - Mandates don’t usually work (at least not as intended)
 - Realized value works
- Has the evolution created opportunities which we’re missing?
 - It is noted that in many markets such as consumer products, we have convergence of many technologies in the device. It is a multi-tool of communication
 - Making them work together has great value potential
 - Synergies expand capabilities exponentially
 - Silo-thinking (“one size fits all” approach to hammering nails) derives from having to “do the best we can with what we got” has been an 802 tradition, but has not evolved into realizing we have a lot more than we used to have.
 - Is tradition leading us to miss opportunities?
- Summary: what does all this discussion mean
 - We have a revision of 802 O&A: revision has to be completed by 2024
 - This is a practical problem we have to solve
 - We must decide (soon) on the scope of the revised O&A – should it really include architecture or not?
 - Question: Is the deadline really 2024, if a revision project has been approved and is progressing, will SA really declare the standard “inactive”? Different views of the rules were given, with no clear answer.
 - What is the glue that binds us together?
 - We address and occupy many market segments, some of which are distinct but many of which have much overlap
 - Market drive is what should drive change in 802
 - History and inertia keep us together
 - The discussion circles back to the value propositions for a common architecture
 - Understanding the relationships between these market segments will help us understand the future we need
- Specific actions from this discussion
 - Revision of Std 802
 - Is there market forces we don’t fully understand
 - Where will the assessment take place?

- Should we do it and if so where and how?

The discussion identified several open questions:

- Do we need common terminology? Or is it bottom up? (Identify)
- Do we need a process for cost/benefit of coherence?
- Market assessment of markets for multiple MAC/PHYs working together?
- Is 802.24 (vertical applications TAG) enough?

Improving technical exposure and collaboration between WGs

The discussion focused on potential organization changes for 802 to promote better awareness of working group (WG) activities by other WGs to promote greater collaboration and technical coherence.

Discussion on future opportunities for better exposure and collaboration between WGs:

- We are not using all the tools we have as effectively as we could. Tools at our disposal that we could use more include Tutorials, Technical Plenary, Liaison reports, Invited Presentations, and cross-WG liaisons.
- Several participants raised concern that narrow slice voting membership is creating isolation in the form of siloed participation that is not always to the benefit of producing quality standards:
 - Silo participation was building prior to 2020 – the trend has been narrower silos, turning the “big picture” (WG and 802 plenaries) into parallel but separate activities that happen to be in the same city
 - On-line attendance has lowered the barrier to becoming “voter” which some are concerned may also dilute the quality of voting
 - Voting and participation are not necessarily equivalent: There is a need to make sure individuals understand 802 more broadly and not just get voting rights (which are complicated)
 - Many voters have not attended an in-person meeting and are without the benefits or perspective provided such as relationships and understanding of subtleties of the process.
 - In-person may naturally help bridge this... but remote has a place too, and solutions should accommodate both. Remote only attendees can make a valuable contribution to 802 standards development
 - Need to reach out and ‘invite them to the buffet’ – engaging outside 802 as well (academics, gov’t research) – at the meetings. Potentially have WNG not require registration fee.
 - There are cases where Silos work. They aren’t always bad. Need to be mindful on broad markets. 802-wide next-gen platform to invite people? Be opportunistic on cross-WG collaboration
 - Need to consider voting rules, perhaps other rules changes to match situations with mixed-mode & remote meetings
- Information exchange: How does a participant know where to go to learn?
 - Hitchhiker’s guide to 802: a guidebook to find what parts of 802 are doing what, cross-organization websites could be made easier (DON’T PANIC)

- Running on borrowed time:
 - Much of what we have been able to get done the last 2.5 years is because of the relationships and ad hoc knowledge obtained before 2020
 - This is not sustainable
 - We have a growing number of participants without the relationships, knowledge, experience (or commitment).
 - There may be a risk that we will lose inertia and momentum.
- Voting issue is very complicated
 - Broader participation has benefits
 - It also has downsides
 - The old way isn't perfect
 - Instead of basing only on attendance, could base on participation
 - This is the point of "use it or lose it" votes on LBs
 - But this results in a lot of "approve" just to keep voting rights (no real review)
 - Attendance is easy to measure, quality of participation not so easy
 - WG Chair discretion is a tool to accommodate (but isn't always consistent)
- Simple things can help
 - Making the WG websites more accessible
- We need to make collaboration easy(er) to make it happen more
- Remote only
 - Can work (Andrew)
 - We became better with practice
 - Combination may work better than we had
 - Thinking about new ways that can be better
 - Balance the "we got better at it with practice" and the point about coasting on momentum built up from the old way not being sustainable
- Leadership elections: move from 2 years to 4 year terms.
- At least one view that we should keep remote participation forever
- Several people raised the issue of "sincerity test" which really means commitment: making it too easy may increase numbers but lower quality participation
 - Maybe create other "sincerity tests" that replace the in-person attendance
 - But that doesn't address the value of mingling
 - Again meaningful metrics are difficult
- Remote is lacking "mingling" and that is critical to the standards development process.
 - Can we achieve the same thing remotely (ever)?
 - Do we fully understand (or accept) the value of mingling
 - Has the luck we've had since 2020 been due to the inertia we had built up and thus not sustainable
 - Very different views expressed on this point
 - It depends greatly on the activity
- We have always have "just show up" and never had a value test
 - Always have folks who are there just for credit and are reading email or surfing cat videos
- We have people who can't or don't want to travel but have a great deal to contribute

- Remote will be with us for a while
 - Maybe good to retain forever
- We have a lot of options and tools to promote inter-WG communication some of which we are not using as much as we could (should)
 - More outreach by the chairs to each other
 - To expand the knowledge, invite people in (invited topics) both internal and external
 - Broad the horizon of members – that’s how you address silos.
 - “Invite them to the buffet” not just the appetizer they came for
- Silos work and work well (Paul)
 - We should not change our mode of operation, especially for those that are broadly market driven
 - We have obtained massive commercial deployments
 - We need to make them more efficient
 - Fail when there is not broad market participation or lead
 - How do we differentiate between a silo that has a large potential market from one that doesn’t
 - Create an 802-wide next generation platform for researchers, academics, industry and government users.
- Cross cutting collaboration
 - Most of the time it is not necessary
 - Only when there are problems individual groups cannot solve on their own
- Increasing participation of “new stuff”
 - Remote participation is key for academic participation
 - Next Generations should be open to anyone (outside the scope of formal sessions)
 - Next step is move IGs out of sessions
- WGs could create tutorials (documents or web presentations) on what each WG does
 - Expand on the tech talks?
- Moving into a new mode of blended participation as a permanent tool:
 - Mostly support for keeping a remote option
 - The rules and process we’ve done for decades are not adequate – need to review and revise to fit the new model of participation
- More academic participation may not be desirable
 - New stuff is cool but we need people who will commit and follow through

Hybrid experience feedback

Experience this week in Montreal. Each workshop attendee was asked to recount the experience in their WG/TAG. General discussion points are gathered along with key points from each workshop participant.

- It generally worked well (better than expected)
- Logistics wise we learned a lot, guidelines helped (see Jon’s deck – READ IT)
 - Ground rules are essential: explain them, make sense, people will comply and it works
- Adhering to queue is important (Difficult people will be difficult online as well)
 - Queue management is important but hard

- Need to figure out how to work and be flexible across timezones, get required meeting numbers
 - Some folks changed their time zone. They realigned for the week and committed to the meeting as if there were here.
 - This helps with the “day job” issue too
 - Somewhat of a sincerity threshold
 - But also very hard to do. Others in the “day job” will not recognize the need and respect that you are virtually somewhere else.
- People: Overall it was good
 - Expectations were low – preparation helped
 - Several of us expected it to go bad and so made extra effort to mitigate the risk of going bad
 - Glenn’s students: Student help offloaded queue management from the chair (should look to this in future)
 - Extra time ahead of the meeting to plan, dry run, checkout the gear
 - Leveraging volunteers to spread the load
 - The dry run in May was a huge help
 - Dedicated person running remote so chair could focus on running the meeting and the technical topic(s) at hand
 - Having the support of someone who isn’t here with other obligations (e.g. the students)
 - Seek out students at the local university to help out and also get to see what we do
 - For it to work we need to maintain this extra level of support and make it easier on the TG/TF leadership
- Hardware and related logistics:
 - Dedicated platform really helped (e.g., R-pi). Problems came to those who didn’t.
 - This goes with a person dedicated to the remote logistics
 - It really helped to have it stay with the room so when we got it working we didn’t break it
 - Support might be meeting room computer, good audio (mic/person)
 - Probably need common platforms, more microphones, including wireless microphones
 - Camera looking at the microphone queue helped
 - Breakdowns made things difficult
 - Backup plans would help
 - Wireless microphones would be useful
 - Same equipment everywhere for consistency and setup
 - Also same practices in setup e.g. monitors and “house” setups
- Improvement in process (Adam, 8D02.3 experience)
 - Merging in-room & online: Seeing who is participating (both ways), unify in-room and online queue for people to see
 - Important to give queue information from the room to the remote participants. There is value on seeing who is in the que when deciding
 - Need best practices for remote participants as well as in-room (particularly audio).
 - Visibility of who is participating – folks on line couldn’t see who is in the room and most people in the room didn’t see who was remote

- Need to get feedback from remote participants.
- Need a way to get participants in contact with each other to work issues (when remote)
- More on voting (Andrew) and straw polls
- Need to get feedback from on-line participants
- Voting and polling
 - Straw poll visibility: you can see who in the room vote on as to know who you need to talk to. Can't see that with DVL or Webex polling.
 - Can we make the voting behavior more transparent, so people know who to work with on issues?
 - Using Webex show of hands worked for some groups, but was incomplete information
 - Pressure from logistics encouraged people to converge without votes
 - This can be good
 - May be a downside sometimes
- 802.15 experience
 - Mentoring - an additional aspect. It is an implied responsibility of all of us here and the Task Group and Standing Committee leadership not here to engage one-on-one with every participant (especially the passive and reactively engages participants) in our respective groups. The potential reaction can be surprising. Yes, you may find that only results in some small tangible (say 20%) proactive response/engagement by a participant that until that point may have been engaged passively or reactively. That impact can still make a sizeable impact in getting both in person and remote participants more engaged.
 - Go with what the 'technical vice chair' (meeting manager) is comfortable with – be flexible.
- General logistics
 - A/V support here (Montreal) was exceptionally good. We cannot expect this at every venue – may need to accommodate lower levels of support quality.
 - Must depend on participants listening to and following instructions.
 - Chairs who listened to the tutorial had a better time
- 802.18 Vice Chair:
 - understanding why attendees attend is important
 - 802.18 is well suited to remote attendance – have done most of their work between sessions for a long time (nature of regulatory)
 - Silos work in certain areas. Not 802.18. RRTAG must cut across groups.
 - Overall went well
 - New model forever
- 802.3 TF chairs feedback
 - We had several different audio interfaces each with their own foibles.
 - There is value in uniformity in the setup and equipment
 - Mid week changes in a given room was a problem
 - Running test runs ahead was a good idea with caveats
 - Can't dry run remote audio with only a few test participants so you don't really know until you fill the room and Webex

- Learning progressed and adjustments were made
 - Engagement was mixed. Hard to draw out remote attendees, easier in person
 - Having marathon meeting slots worked with remote attendees
- Number of screens on the table – more was better. At least 3 PCs per room. In some cases 2 could work but in general need 3.
- 802.15 chair:
 - Used DVL for formal votes (WG) and wasn't hard
 - Sent out voting lists and invites days before needed
 - For TG motions not always
 - Kinds of participation: passive and reactive
- 802.11 Chair
 - Excellent overall
 - Had everyone on Webex
 - Used Webex tools for votes and queuing
 - Most people liked it that way – made engagement better
 - Had to learn to use mic consistently
 - Big room w/mic stand queue adopted faster
 - Took time to learn the talking stick method
 - Had extra volunteers to divide up the tasks
 - Couple TG chairs based in China
 - Had a dedicated person to be the gateway
 - Remote chair worked with local person assist
 - Managed room/remote with 1 laptop mostly
 - Jon and AV team killed it!
- 802.1
 - Continue mixed from here
 - Common queuing app may be useful
 - Controversial topics difficult to resolve with remote only
 - More microphones
 - Consistent setup
- 802.15 VC
 - More microphones – one wireless
- 802.19 VC
 - May not even need a room for some groups – could Webex from the lounge
 - Makes sense when people attend more than one group (e.g. dot-19)
- 802.24 Chair:
 - Owl worked really well where we had them
- 802.11 VC:
 - Small board – OWL
 - Larger board – 1 wireless (talking stick)
 - Large rooms – table mics and one or two floor mics
 - All worked surprisingly well
 - Those that listened to the “tips” had a better experience
- 802.1 chair

- Different room setup and floor mic didn't really work
- Wireless mic as talking stick wasn't great for a big room either as someone has to be responsible for transport
- Wants 802 to provide a meeting computer
- Try video
 - Whomever is presenting (remote or inroom)
 - Vid of who's at the in-room que
- Former chair:
 - We need to repeat workshop focused on hybrid the week after November meeting (virtual)
- 802.18 Chair
 - Need clear rule: if internet breaks down, the face to face continues
- 802 Treasurer/Workshop co-lead
 - Mid to large rooms need wireless mic
 - Need to allow quick discussion so rapidly pass the talking stick
 - Speakerphone for small rooms
- 802.11 Chair
 - "Outstanding" meeting experience, use of A/V, practices from Rosdahl
 - Pre-review with chairs, preparation looking at setup paid off
 - In room participants on the Webex (used for voting)
 - Learning curve on needing to use the microphone
 - Advised subgroup chairs to leverage vice chairs to manage the queue
 - Designated person to be gateway to the internet (was a volunteer)
 - Using Webex for queue worked – makes it easy to manage the queue
 - Video may violate the "no recording and no pictures" rules
 - May need rule change AND need to clear it with IEEE staff
- 802.11 SC Chair
 - Stretch goal: possibility of recorded votes (formal)
- 802.3 VC
 - Monitor screen is good
 - Need to have a monitor speaker in the room too for the head table
- 802.3 Chiar
 - Used a camera and didn't record but should check
 - Also should check with the Webex transcript
 - Using closed caption so long as it is not being recorded
- EC VC
 - Encourage all participants use Webex while in the room
- EC Recording Secretary
 - Had audio problems for in-room
 - Head table needs an audio monitor
 - Trying headsets didn't work in-room
 - About 90 in person and 60 remote
 - Got audio fixed
 - Must do an audio check in each room

- Former 802.11 Chair
 - Well done
 - Discipline thing: ensure people in the room are not having side chats

Near-term future meetings - November 2022 Focus

The focus of this discussion was the 802 Plenary in November 2022.

- Reality for November
 - Not going to provide computers for each room
 - Not likely to have a head table confidence monitor
 - Will try to arrange rooms so head table can see screen
 - Will explore first two for future meetings
- Each medium or larger room needs audio monitors for the head table
- Other thoughts:
 - Continue mixed mode (Webex) for all in-person
 - Common queuing app may be useful
 - Controversial topics were difficult to resolve with remote attendees
 - Monitoring may be OK remote, but driving work benefits from in-person (but needs a critical mass)
 - In-person plenaries have long hours
 - See [Closing Plenary July 2020 \(ieee802.org\)](https://www.ieee802.org/2020/07/closing-plenary)
- November meeting: what to add, try
 - Wireless microphones (for mid to large rooms)
 - Second screen/confidence monitor (or front table to see screen)
 - 802-supported meeting computer
 - Try video – preferably pointing at the speaker/presenter
 - Owl/conferencing device works for small rooms (could use more)
 - May not need rooms for some meetings
 - Debrief after Bangkok
 - Ground rules covering what happens if internet fails
 - Keep quality, advertise ground rules first
 - Everyone on Webex – without audio
 - Stretch goal - Recorded votes (both formal and straw polls)
 - Head table accounted for in audio planning
 - Sound check of room for acoustics
 - Remind people about discipline on side conversations in the room.

Future meeting structure: review of 2020-21-22.5 experience:

This discussion began focused on the virtual meeting experience from early 2020 up to but not including the July plenary.

- The responses were polar: either totally remote or totally in person
 - Remote as an augmentation of F2F (or F2F/hybrid) vs. Only having remote meeting

- Some activities work well remote-only (maybe better than face to face):
 - EC meetings – can we do with out F2F? Reduce # (1/plenary)
 - Many EC functions can be easily handled by teleconference
 - However, important
 - Point that remote works well until it doesn't. When you have problems, F2F may be needed to fix it (handle F2F by exception)
 - Paul: we don't need face to face EC meetings
- Does remote work for mature projects?
 - Some experience
- Focus on remote only meetings, input from the ad hoc meetings
 - What we've learned from 2020-2022.5
- Remote only can be more frequent
 - More frequent can be better (or not)
- Observation:
 - "isn't it interesting that we see the same faces that we saw before that showed how invested they are and the show the importance of the projects"
 - The EC works remote because we already know each other.
 - In person may be needed for the future
- Lots of discussion about cost
 - Hotel and flight expenses are less (0) with remote
 - Actual cost needs to consider time and productivity
 - It takes more time to get stuff done
 - Remote sessions spread out and increase burden in time especially for leadership
 - Time and productivity costs harder to measure and expose to accountants
- Are remote only meetings really cheaper to run & attend?
 - Consider volunteer cost of time and interruption of schedule
 - Time lost due to time zones
 - Time lost due to less efficient progress
 - Yes, they are cheaper from hotel & flight expenses...
 - And (so far) cheaper for 802
- Determining cost/benefit depends on how we measure
 - Travel costs are easy to measure
 - Productivity harder
 - Disruption impact on "day job" harder
 - Should not ignore it because it's hard
- Another view: things have changed
 - 2020 spreading to 2 weeks for remote only sessions wasn't as much impact
 - Today we're back doing other things and it is harder
 - Changing from 1 week to 2 (e.g. May) really disruptive
- We won't abandon remote meetings in between sessions
- Environmental impacts (controversial and political topic)
- Question: asks about the methodology of the survey presented

- Less than 10 responses on either side of some questions
 - Need more data to rank the importance of these issues
- Some comments that remote meetings can be more effective
 - Very dependent on individual situation
- Diversity of views
- Definitely needs much further discussion and investigation
 - Need to develop metrics for success and productivity
 - Need system view of cost/benefit
- Are there cases where remote meetings are more effective
 - It was suggested 802 EC meetings may be more efficient remote than F2F
- Are more frequent meetings actually better in all cases?
 - How frequently should we meet face to face as 802, WGs, subgroups?
 - Is it more about the frequency of meetings where decisions/process advancement are made?
- Clarification
 - 3 plenary per year set by 802 EC
 - WGs (wireless case collection of WGs) set interim schedules
 - Not all WGs use the same cadence for interims
- How much should we codify in rules?
 - Which rules are binding us now, keeping people from experimenting
- When conference calls need to turn up the cadence, they can eliminate many participants
 - Need to consider (pre-pandemic) rule limiting telecon hours per week?
 - Competition for prime times is a conflict
 - It was noted that reducing participation may counter to producing quality standards
- Speed and efficiency based on this week has been substantially faster than remote only
- Real-time informal relationships are important in standards development
 - Empathy is an important part of consensus
 - ‘Breakthroughs often happen in the bar or hallway’
 - How to bridge the gap to the remote participant with concerns but not suggestions to resolve?
 - “Reading the room” is important
 - How much of this gap can video fill
 - Is voting too anonymous without presence?
 - What about the quiet participants who just vote?
 - How do we better identify and mitigate disagreements
- Decision making: are remote meetings more or less effective at driving consensus decisions?
 - There can be various definitions of consensus: easy vs useful
 - Fewer people actively debating can lead to quicker decisions
 - But lack of broad input can lead to non-optimal decisions
 - Voting brings issues to a head and can be faster
 - But is designed for situations without full agreement so less consensus
 - Voting on every technical issue can dramatically slow things down
 - Easy to “block” a decision (25%+1)
 - Can lead to complete stalemate (failed project)

- Can lead to “consensus by attrition” when lack of useful progress leads to people dropping out
 - Consensus through collaboration is more efficient and effective (produces better standards)
 - Voting is harder on remote and hybrid meetings (more than tools)
 - More frequent remote meetings
 - May bring more discussion and broader consensus
 - May take longer to get to consensus
 - May have potential for dominance with a lower barrier to entry
 - Suggestion/conclusion: continue discussion in the ad hoc
- Other considerations
 - random access to different meetings important?
 - Do we have large enough and enough worldwide timeslots to move much of our work to remote access?
 - Has new work actually slowed?
 - Are remote meetings the same or different from F2F in their process and function?

Controversies on participation (probably needs to be in another section)

- Are more people on a call necessarily more participation?
- Discussion of metrics: how to measure participation? Various different ways:
 - Registered at meeting, logging attendance, attendee in the Webex (present)
 - Participating in votes and polls
 - Heard in discussion
 - Submitting contributions
- Is “more” always “better”?
- How can we assure quality participation opportunities?
- How much of the increase in attendance since 2020 is due to new work and new interest areas?
 - In these areas lower bar to attend may attract more people, but also lack of “relationship building” may mean they’re not getting full value from attending
- Some activities work well remote-only (maybe better than face to face):
 - EC meetings – can we do with out F2F? Reduce # (1/plenary)
 - Many EC functions can be easily handled by teleconference
 - However, important
 - Point that remote works well until it doesn’t. When you have problems, F2F may be needed to fix it (handle F2F by exception)
 - Paul: we don’t need face to face EC meetings
- Does remote work for mature projects?
 - Some experience was that it worked OK
 - Some experience was that it definitely did not work OK
- Starting new projects?
 - Definitely impaired by lack of F2F meetings

Overflow/New Topics that came up

Discussion on coexistence: There was some discussion regarding the role of the wireless working groups (802.11, 802.15 and 802.190 with respect to coexistence. Some key points

- Wireless coexistence is increasingly critical to effective access to spectrum
- Taking a proactive, positive role in 802 can positively influence both industry practice and regulator response
- We have different views of what “positive coexistence” means
 - If it doesn’t interfere with my stuff, it’s good and If my stuff interferes with your stuff that is not my problem
 - The future of wireless depends on positive coexistence in every direction in order to achieve the full value of spectrum and access to more spectrum: it is all “our” problem (we are all 802)
- There is more in the wireless world than 802
 - Positive relationships with other industry organizations and SDOs can be good
- Role of 802.19: different views
 - 802.19 is “like mother” of the 802 wireless family and not the place to work on coexistence issues
 - 802.19 is “like the family room” and exactly the right place to work on coexistence solutions
- Success when coexistence is taken up in a positive way by 802: Rule changes in Japan to allow sub-1GHz 802.11ah to operate were greatly assisted by existence of IEEE Std 802.19.3
 - Lessons learned in that effort can transfer to other bands
 - The WG considered other than 802 wireless in the development of 802.19.3
- What is the responsibilities of 802 WGs to consider and promote positive coexistence?
 - Very different views expressed
 - The current coexistence analysis process can be useful
 - Some viewed the process as a barrier to be overcome and never useful
 - Some sub-groups have put a lot of effort into the CAD which has proven useful (to those that look)
 - Other sub-groups do the minimum to “check the box” which is not very useful
- We have multiple different coexistence cultures in 802

Appendix B: Agenda

START	Duration (Min)	EVENT
9:00 AM	15	Meeting Introduction
9:15 AM	15	Scope and objectives (of workshop)

9:30 AM	45	802 Architecture and technical coherence
10:15 AM	15	Coffee Break
10:30 AM	60	Future organization of 802 and Improving technical exposure and collaboration between WGs
11:30 AM	45	Mid-Day feedback: Hybrid experience
12:15 PM	60	Lunch Buffet
1:15 PM	30	Hybrid experience feedback (cont)
1:45 PM	15	First future meeting – focus on November 2022
2:00 PM	60	Future meeting structure: review of 2020-21 experience:
3:00 PM	15	<i>Overflow/New Topics that came up</i>
3:15 PM	15	Coffee Break (15 min pad before)
3:30 PM	45	Discussion and Review
4:15 PM	30	Outline of Workshop Report – and follow up
4:45 PM	15	Wrap-up
5:00 PM		Adjournment