

Khronos Working Group Guidelines

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1. Introduction

This document contains recommended practices for Khronos Working Group elections, organization, consensus-building, decision-making, and outreach activities. A key underlying principle is providing equal and open accessibility to all Working Group meetings, information, and records for all members.

These guidelines do not supersede the [Khronos Membership Agreement](#), which includes the Khronos Intellectual Property Rights Policy (“**IP Framework**”) in Attachment A. They are intended to provide Working Groups and Chairs with practical processes to ensure the Membership Agreement is being correctly applied. If this document has inadvertent inconsistencies with the Membership Agreement, then the Membership Agreement and IP Framework take precedence.

2. Working Group Chair Responsibilities

The success of a Working Group is strongly influenced by the leadership of the Chair whose primary role is to facilitate consensus-building among Working Group members. Other responsibilities of the Chair include:

- Ensuring the Working Group's activities are compliant with the Khronos Membership Agreement, IP Framework and all other Khronos policies.
- Ensuring the Working Group Statement of Work (SOW) is agreed by the Working Group and the Board and kept current.
- Initiating election of all Working Group Official positions.
- Guiding the Working Group to delegate appropriate work to Task Sub-Groups (TSGs) and coordinate the election of TSG Chairs.
- Creating and posting a meeting/call schedule with appropriate advance notice of all meetings.
- Defining meeting agendas.
- Recording and posting attendee lists for every meeting.
- Encouraging member participation and contributions.
- Recording and tracking actions.
- Ensuring that all contributions and draft materials are kept confidential within Khronos and made equally available online to all Khronos members and staff.
- Ensuring minutes are taken, posted in a timely way, and approved at subsequent meetings.
- Staying neutral in discussions unless making it explicit when representing their company.
- Overseeing and recording voting and decision-making in an open and transparent way.
- Coordinating the creation, approval, and submission of Project Proposals to the Board.
- Overseeing the execution of approved projects.
- Coordinating the selection and management of working group subcontractors.
- Encouraging membership in, and communication with, the Working Group’s Advisory Panel.
- Ensuring the Khronos Ratification Process is followed for specification releases.
- Ensuring that publicly accessible projects and repositories managed by the Working Group are covered by Khronos-approved contribution and outbound licenses.
- Providing Working Group updates to the Technical Advisory Panel (TAP) and Board of Directors including objectives, timelines, and metrics.
- Coordinating Working Group marketing and outreach activities with Khronos marketing staff, including regularly updating a Quad Chart summarizing accomplishments, deliverables, upcoming milestones and issues/concerns for the Working Group and all TSGs within the Working Group.
- Ensuring the Working Group landing page and other public information is kept up to date.

At any time, any Working Group member having a concern about process execution or decision making in the Working Group that may have a significant negative impact on that member or the group can elevate concerns about the operation of a Working Group, or the conduct of its Chair, to the Board, under the [Khronos Whistleblower Policy](#) if necessary.

3. Mandated Working Group Practices

Working Groups may adapt these guidelines to meet their own unique needs, however, some core practices *are* mandated by Khronos Bylaws, IP Framework and legal necessity:

- All Working Group materials must be equally available to all members.
- All Working Group materials should be marked and kept as Khronos Confidential, with the exception of [high-level marketing and outreach information](#) approved by the Working Group. Otherwise, the Working Group must obtain approval from the Board to publicly release Khronos Confidential information, in particular draft specifications, which must not be circulated publicly before ratification unless under [explicit permission from the Board](#).
- All members are entitled to participate in any Working Group at any time. All Working Group-related mailing lists must be available for any member to join and all meeting invitations circulated on the primary email list for that working group or TSG.
- It is vital that accurate attendance records be created, circulated to the Working Group, and archived for every meeting without exception, as attendance may have legal consequences under the IP Framework. For example, a Member's Working Group Exclusion may be affected through attending a Working Group meeting in person or online. Although the responsibility to not accidentally void their Working Group Exclusions through attendance lies with the Member, Chairs should try to be aware of any [Members that have excluded themselves](#) from their Working Group and, if possible, warn a member that their exclusion is at risk if they don't leave before the meeting starts. Chairs should alert Khronos staff if they are aware that an excluded Member has attended a Working Group meeting.
- All Promoter and Contributor members, if in good standing, are entitled to one vote per company in Working Group formal votes.
- Compliance to the Khronos IP Framework must be maintained using the Ratification and IP Committee processes.
- Elections must be held for the Working Group and TSG Chairs and any other Official positions.
- Khronos Members designated as liaisons to other organizations under the standard Khronos Liaison Agreement must not contribute detailed designs at the liaison organization as those contributions would not be covered by the Khronos IP Framework. Conversely, any Chair hosting a liaison from another organization should remind them of the same obligation as necessary to prevent unlicensed design contributions to Khronos specifications.
- If a Working Group invites occasional external experts that are not members or Advisors to speak, then that session must be clearly delineated as not being covered by the IP Framework, with no detailed design contributions being discussed, no Khronos Confidential information disclosed, and the session shall not affect member's good standing.

4. Working Group Elections

To promote openness and accountability, every Working Group, and every TSG of the Working Group, must have an elected Chair. A Working Group may create positions for additional elected Officials at any time, including:

- A specification editor, or editors, if the working group is drafting specifications or other significant documents. The Chair cannot also stand as the specification editor.
- A secretary responsible for minutes and other record keeping.
- Additional roles with responsibility for coordinating Advisory Panel, conformance testing, tooling, outreach, or other Working Group activities.

Working Group elections should be held when a new position is created, as described in the following situations::

- As soon as a new Working Group has an established quorum at regular meetings under the temporary chair designated by the Board of Directors, a Chair shall be elected.
- When the Working Group creates a new TSG, a Chair shall be elected (see [TSG section](#) for more details).
- When the Working Group creates a new Official position, such Official shall be elected.

Each Chair or Official should serve a two-year term by default. However, within one's term, Working Group Elections should be held for the Chair and other Officials in the following situations, with the precise timing being agreed by the Working Group where possible to minimize disruption:

- A Chair or Official steps down.
- The Working Group votes to re-elect any Chair or Official at any time.
- When the Chair or Official changes their company representation, either through a change of employment, company acquisition, or other circumstances.

- Within 60 days of the public release of a new version of the Working Group’s primary specification, not including extensions, maintenance updates, provisional releases, or specifications released less than twelve months since the last election.

The Chair and specification editor cannot be from the same company (including affiliates) unless with explicit Board permission:

- If an election involves the Chair or specification editor then the ballot should contain an agreed action if voting may result in a single member holding both positions. For example, one of the Officers could step down and their position put up for re-election, or as a last resort an exception sought from the Board.

Working Group elections are held anonymously through Causeway ballots and administered by non-member Khronos staff:

- The current Working Group Chair issues a call for self-nominations on the Working Group email list, including the nomination deadline and a description of the positions being elected.
- Any Khronos member, including the current holders of any position, may submit a nominating statement before the deadline to the Working Group email list. Statements should include a brief background, suitability, and interest in the position.
- After the nomination deadline, the Khronos Managing Director will be notified of the candidates and will assist the Chair to create an electronic, anonymous ballot in Causeway that includes Yes/No/Abstain if one candidate, or, the name of each candidate, “abstain” and, “none of the above” if there is more than one candidate.
- All Promoter and Contributor members in good standing in the Working Group at time of ballot distribution are eligible to vote, with that list of members being included in the ballot.
- Eligible members shall cast one vote per company via the Causeway Ballot module. Votes cast shall be sent only to Khronos staff and not the Chair or Working Group members.
- The vote has a quorum requirement of at least 50% of eligible members voting for a candidate or abstaining. If quorum requirements are not met, or in the event of a draw between the leading candidates, the vote will be held again with the current nominees.
- The candidate with the plurality of votes cast is elected. If “No” or “none of the above” wins a plurality of votes then the nomination process is restarted.
- Khronos staff publish the results to the Working Group email list summarizing only total votes, not how individual members voted.
- The Working Group minutes shall record the candidates nominated for each position and the elected candidate.
- The newly elected Officials shall assume their responsibilities as soon as is feasible.

When any position changes hands, the outgoing Official will transfer all documents and make reasonable efforts to provide guidance and assistance for a smooth transition.

5. Working Group Statement of Work

All Working Groups post a Board-approved Statement of Work (SOW) on the Khronos member web site that defines their scope and objectives. SOWs assist in aligning working group activities with Khronos’ strategic goals, and aid members in evaluating whether they wish to participate.

- A Working Group should update its SOW if it becomes outdated or the Working Group wishes to make changes, for example after a major release or other significant ecosystem events. If the updated SOW does not expand the domain of design that would cause members to license additional areas of IP upon ratification, once agreed by the Working Group, the updated SOW should be submitted to the Board for review, approval and posting in parallel with Working Group activities.
- If the Working Group wishes to expand its domain of design, then no detailed design work may commence in the new domain until the SOW is approved by the Board. Such an ‘additive’ SOW must be accompanied by any objections to the expansion of IP commitments from any Working Group members. The Board may take multiple scheduled meetings to review and approve an ‘additive’ SOW, will alert the general membership for additional objections, and will consider appropriate remedies for objecting members so that their IP in the new design areas is not licensed.
- If the Working Group does not submit an updated SOW for an extended period, the Board may, at its discretion, initiate an SOW review to ensure it is current and that goals are being met and tracked. The Managing Director will be responsible for scheduling Board SOW reviews.
- If an SOW is not initially approved by the Board, the Board will work with the Working Group to address any issues until the Working Group and Board agree on a modified SOW.

- All members are encouraged to flag to the Board at any time if they believe a SOW is not being followed.
- Working Groups should consider documenting key design decisions alongside the SOW to ensure a consistency of design and to prevent basic design directions being repetitively discussed. Such documentation tracking design decisions within the scope of the SOW can be updated without Board approval.

6. Task Sub-Groups and Dynamic TSGs

A Working Group may delegate specific activities within its SOW to a Task Sub-Group (TSG) for logistical efficiency. The objectives and duration of a TSG is agreed by the Working Group and do not need Board approval. However, the activities of a TSG must not extend beyond the parent Working Group SOW.

When first formed, the [Working Group shall elect the TSG chair](#). The parent Working Group may also re-elect the TSG Chair in the following situations:

- The Working Group is re-electing multiple Officials on a single ballot, for example to enforce term limits.
- The Working Group agrees to replace the TSG Chair for any reason.

TSGs use a separate email list and online resources nested under its parent Working Group in Causeway. A TSG operates logistically as a Working Group, setting its own meeting schedule, and maintaining minutes and record of good standing. All formal decisions within a TSG shall be made by members in good standing in that TSG, including election of any TSG Officials, and a new TSG Chair if necessary. The TSG may vote to pass drafts, recommendations, and other deliverables at any time to its parent Working Group, that may accept, reject or modify them. TSGs shall not pass specifications directly to the Board for Ratification. TSGs shall not communicate outside Khronos without the agreement of its parent Working Group.

All TSGs are open to all Khronos members and attendance at any TSG meeting is deemed as attendance at its parent Working Group, which may have legal consequences under the IP Framework [as explained here](#).

There may be topics that require concentrated, short-lived, discussions where the majority of the Working Group do not wish to be involved. A 'Dynamic TSG' is a sub-committee that meets for a very limited duration to discuss such topics and returns to the main Working Group with recommendations:

- The Working Group designates a Chair for a Dynamic TSG, an election is not required.
- Dynamic TSGs do not create a standalone email list but use the main Working Group list.
- Dynamic TSG meetings are open to all Working Group members; the agendas, meeting invites, and minutes are circulated on the main Working Group email list.
- Dynamic TSG attendance does not affect good standing in the main Working Group. If a formal vote or non-consensus decision is required, it must be held at the Working Group, including replacement of the Chair.

7. Online Resources

Working Groups must use a clearly designated primary email list for online discussions. Working Groups may create additional mailing lists for specific purposes, typically for use by TSGs. The method for subscribing and unsubscribing to these lists will be published on the Khronos member website and be available to all members.

All confidential Working Group online resources will be hosted on the Khronos password-protected secure server using https to enable access by Khronos members only. The Working Group Chair will manage and organize online resources containing meeting minutes, attendance records, written contributions, proposal revisions, and other documents.

Working Groups may also use online resources such as GitLab and GitHub repositories and are encouraged to use Git issues to log specification discussions for effective decision tracking and archival. Working Groups may also use chat platforms such as Slack or Mattermost but are strongly encouraged to use this for transient conversations and hold all significant discussions and decisions at meetings, or on the archived Working Group email list or Git repositories.

Working Groups can use Google Docs, Slides and Sheets for collaborative projects with sharing settings of 'Anyone on the Internet can Edit/Comment' but the link to that document must be kept Khronos Confidential.

8. Meetings

The Working Group may use any combination of face-to-face and teleconference meetings at its discretion. Online access will always be provided to face-to-face meetings. Each Working Group will define its meeting schedule well in advance, preferably covering the next 3-6 months.

Unless regularly scheduled, no Working Group meeting may not be held with less than two weeks' notice unless with the agreement of the Working Group members. If a meeting is held with less than two weeks' notice, the Working Group may agree to designate that meeting as an 'ad hoc meeting' that does not enter into the calculation of good standing. If more than 50% of regularly scheduled meetings for a Working Group are cancelled, at least one week's notice shall be provided of confirmation of a meeting being held.

The Working Group must record detailed meeting minutes. This enables the group to maintain coherent forward progress. The meeting minutes do not have to be verbatim, but must include:

- Attendance.
- Approval of previous minutes.
- Agenda.
- Key discussion points.
- Decisions / votes.
- Action items and designated actionees.

Working Group minutes must be stored in a single, clearly defined online location that archives minutes for all meetings. It is strongly recommended that meeting minutes be archived in a format that enables searching of their contents. Some Working Groups store minutes in the Gitlab wiki associated with the primary Working Group repo.

9. Building Consensus and Making Decisions

The notion of consensus is integral to the Khronos process and while unanimous consensus is strongly preferred for issue resolution, it is not practical that Working Groups reach unanimous consensus on all issues. The process for introducing and resolving issues is as follows:

- Issue Formulation and Documentation - any participant may call for a vote by fully documenting/articulating a specific issue and framing a proposal for voting.
- Straw Poll – the Chair can hold informal straw polls to gauge whether or not there is unanimous consensus on an issue. At the discretion of the Chair, members not in good standing may vote in a straw poll to gather the broadest range of opinion. If there is unanimous consensus on issue resolution the Chair may record in the minutes that the issue is resolved through a 'decision by unanimous consensus'.
- Debate - if there is not unanimous consensus, arguments can be presented, if necessary in a time window defined in advance and enforced by the Chair, followed by Working Group discussions under the guidance of the Chair.
- Formal vote – the Chair should take care to precisely and clearly define the wording of the vote and ensure genuine understanding by the Working Group before any voting commences.
- If the vote passes, record any dissent and consider the issue resolved.
- If the vote does not pass, return to the debate stage. If the issue is not resolved in the second vote, the Chair must work with the various sides to reformulate the problem so the Working Group can achieve a decision in a reasonable time.

Any member may reopen a resolved issue by obtaining unanimous consensus support, or if necessary, calling for a vote to open the resolved issue. The Chair should encourage the Working Group to consider whether there is new information relevant to the issue that would significantly change the opinions of participants before the Working Group decides to open a resolved issue. Once re-opened, the issue should be resolved using the standard resolution process above.

10. Participation and Voting Rights

With the exception of Individual Contributors, any Khronos member may attend any Working Group meeting. Promoters and Contributors have voting privileges as defined below. Associate, Non-Profit, Academic Contributor and Individual Contributor members do not have formal voting privileges.

To encourage active participation, rights to take part in a Working Group vote are limited to members in good standing, which is defined as Promoter and Contributor members that have attended two of the last three Working Group meetings in person or by phone, including being present at the current meeting. Each participating Promoter and Contributor present at the meeting and in good standing may cast one vote, being cast by any employee of that member. When a Working Group is founded all attendees are deemed to be in good standing in the first meeting. For second and subsequent meetings the good standing rules above apply. New members may vote on their second meeting – if they are in good standing.

The Chair should enumerate and verify the current members in good standing before the first vote of any meeting to clearly establish the quorum and supermajority requirements, and clearly record results of all votes on a per company basis in the minutes or meeting attendance sheet.

The Chair may, as a courtesy, invite any members not in good standing to have their voting intentions recorded in the minutes, including by stating their voting intention by email if unable to attend a meeting in person.

Multiple Session Meetings (e.g., a physical or virtual face to face meeting, or multiple meeting slots during the regular weekly schedule, can be counted as a single meeting where attendance at one or more sessions count as attendance at the entire Multiple Session Meeting for the purposes of recording attendance and calculating good standing. The sessions to be included in a Multiple Session Meeting must be clearly communicated and agreed before any session starts. The date of the first session is the attendance date at a Multiple Session Meeting for the purposes of calculating good standing.

Any Working Group vote (with the one exception of voting to pass a specification for ratification) is passed when a super majority of votes of at least 2/3 of the non-abstaining votes cast are in favor of an issue with a quorum requirement of at least 50% of participants in good standing voting for, against or abstaining. The vote to pass the Final Draft Specification to the Board for ratification must be passed with a super majority of votes of at least 3/4 of the non-abstaining votes cast with the same quorum requirement.

If it is apparent that the Working Group has reached unanimous consensus on a vote the Chair may, in the interests of time, call for a 'decision by unanimous consensus.' If there are no objections, and there is quorum in the meeting, the Chair may announce and record the decision as a unanimous vote of those in good standing. Decisions by consensus should be highlighted in the minutes so any questions or objections may be raised by any member in the review of minutes in the subsequent meeting. If there are any objections to a decision by consensus raised during the vote, or in the review of minutes in the subsequent meeting, a full per-member vote should be held.

It is strongly advised that full per-member recorded votes are held for significant decisions, such as agreeing to enter a draft specification into Ratification, even if the group appears to be in unanimous consensus. If important votes are scheduled for upcoming meetings the Chair is encouraged to circulate the wording of the vote as early as possible and remind the Working Group of the voting schedule as appropriate.

A Working Group may hold votes on the Working Group mailing list, with no meeting, with a clearly defined deadline that is at least one week from the call to vote. The list of members in good standing for an email vote is that of the Working Group meeting preceding the email vote and should be enumerated in the call to vote email. Members that do not vote before the deadline are deemed not present for the purposes of calculating quorum. Any member may raise an objection to an email vote. If any objections are raised by members, the Chair shall cancel the vote and address the objection on the Working Group email list or at the next Working Group meeting. Once any objections are addressed, the vote may be restarted at a meeting or on the Working Group mailing list.

11. Intellectual Property (IP) Sensitive Discussions and IP Committees

All members should be sensitive to potential IP issues related to cooperatively creating open standards. Working Groups should never discuss intellectual property rights, including identifying patents or potential infringement of any patents by any specification. If any Working Group member becomes aware of the need for IP discussions they shall request the formation of an IP Committee by communicating high-level concerns so that the scope of the IP Committee can be determined, without including any details about specific patents, patent holders or potential infringement.

IP Committees create a report to the Working Group that contains only recommended actions but must not include any discussion around individual patents or how they relate to any specification, the validity or invalidity of any IP claims, or opinions as to infringement or non-infringement.

If a Working Group becomes aware of an IP issue for a specification under its control, through a member request or otherwise, it will request that the Board approve an IP Committee, and once approved, the Working Group Chair will convene an IP Committee as soon as possible. If an IP Disclosure Certificate is received for any draft specification, an IP Committee is automatically approved on the day of receipt for the Working Group controlling that specification.

Once approved by the Board an IP Committee operates under the following guidelines:

- IP Committees may meet as many times as necessary to reach consensus on recommended actions during a 90-day period after being approved. If necessary, the Working Group may request a time extension from the Board.
- Working Group members are free to not participate in the IP Committee without affecting their good standing in the Working Group.
- IP Committee meetings are not minuted and no attendance record is taken.

Once the IP Committee delivers its report to the Working Group, the IP Committee is dissolved, and the Working Group shall agree what action, if any, is to be taken while taking care to not discuss the reasoning for the recommendations.

12. Ratification Process

Unless specifically agreed by the Board, all major releases of Khronos specifications, including extensions, need to be ratified by the Board before public release. The Board will review whether the Working Group has delivered a specification within the bounds of the Working Group SOW, that Khronos processes have been followed and that the specification is meeting broad market needs.

Ideally, when a specification is submitted for ratification the Working Group will be aware of at least two independent conformant implementations of the specification and have Conformance Tests ready for immediate integration into an Adopters Program. Optional extensions should have at least one implementation and Conformance Tests before submission for ratification. Working Groups may agree on and enforce higher criteria for ratification submissions at their discretion.

Pragmatically, final conformant implementations and conformance tests are interdependent and insisting on conformant implementations and proven tests before ratification could delay the specification to the extent of damaging market acceptance. In which case, the Board typically look for the following milestones to be met before ratification:

- The Working Group is confident that all areas of the specification have been independently implemented twice so that ‘spec bugs and flaws that become obvious through implementation’ have been discovered. The implementations do not have to be complete in themselves - multiple partial implementations from different members can be used to generate specification coverage, additionally, the implementations do not have to be released, or announced or conformant – or even available to the Working Group – working on trust to take implementers at their word.
- Conformance Tests are nearing completion and can be released within three months of ratification to enable timely shipment of conformant implementations.

Extensions can be ratified separately to the related core specification. This can be useful for decoupling extension specification and Conformance Tests timelines from core specification major releases.

When a Working Group votes to pass a major release of a specification to the Board for ratification it should:

- Immediately upload all specifications to be ratified to the [GitLab Ratification Repository](#). Create a new folder for your submission following the Instructions in the repo [README](#). If you have trouble, talk to Neil Trevett. The uploaded files should be a stable snapshot of the specifications to be ratified, NOT links to live specifications. You can upload PDF, HTML or markdown files.
- Copy the [Template Submission README](#) to your Submission folder and edit the indicated fields to provide details about the contents of the folder, the purpose of the specification, and as many details as possible about the public launch plans for the specifications if they are successfully ratified.
- Assign the merge request to Neil Trevett (@ntrevett) for approval. After the MR is merged, Neil, who, as Chair of the Board, will distribute the specification to the Board and Khronos membership, initiate the six-week (42 day) Ratification Review Period and schedule a vote to ratify the specification at the first scheduled Board meeting following the end of the Ratification Review period.
- If the Working Group discovers the need for updates that materially affect the IP content of the specification it must request that the Board cancel or restart the Ratification Review Period.
- The Board will immediately notify the Working Group of the result of the Ratification Vote and confirm agreement with any Working Group launch plans if the vote was successful or indicate remedies if not.

Working Groups may create and publicly release minor updates to specifications that contain clarifications, bug fixes, formatting updates and other changes that the Working Group agrees have no IPR ramifications without circulating that updated specification to the Board for ratification. If there is any doubt whether an updated specification has IP changes, the Working Group should submit it for ratification before public release. If any member has concerns that an unratified specification update has IP ramifications, they are encouraged to raise those concerns to the Board.

Working Groups may produce minor updates to a specification during its Ratification Review Period, often as a final polishing pass before public release. As above, if there is any doubt whether any updates introduce IP changes, the Ratification Review Period should be restarted with the updated specification. In any case, the Board’s ratification vote to ratify under the IP Framework is made relative to the specification submitted to ratification, not any subsequent minor specification updates.

13. Provisional Specifications

A Provisional Specification is ratified by the Board through the normal process – but is publicly released to gain industry feedback and so may be updated before a finalized, non-Provisional Specification is released. Working Groups need to be careful to not cause industry confusion by needlessly releasing provisional specifications – and so a Working Group should use a Provisional Specification release ONLY if the specification will genuinely benefit from broad public review and it is a clear positive for momentum and market adoption. In addition:

- Provisional Specifications should be clearly marked with the rationale for the provisional release, a prominent warning that functionality might change before finalization, and the mechanisms by which the Working Group can receive feedback.
- Provisional Specifications should be complete and final, modulo feedback, NOT partial specifications. Modifications before finalization, should be limited to reactions to received feedback or discovered bug fixes and clarifications. Unprompted new functionality should typically be deferred to a later specification version.
- Where possible there should be one layer of implementation coverage but this is not necessary if external feedback is needed as much or more than implementation experience.
- Wherever possible there should be provisional Conformance Tests and these may be released into open source to encourage more industry feedback. Adopters Programs should not be released for Provisional specifications.

Even if there are no changes made to a Provisional Specification, the final version must still be submitted to the Board for ratification per normal processes.

14. IP Encumbered Specifications

The Khronos Board may ratify a specification that is encumbered after giving due considerations to the specific licensing terms and any market fragmentation that might otherwise occur, but only in exceptional circumstances.

Although IP encumbered specifications are permitted by the Khronos Membership Agreement, Khronos was founded on the belief that royalty-free standards maximize market growth and reduce adoption uncertainty. Consequently, Working Groups are urged to draft specifications that are unencumbered by specific licensing terms such as fees and royalties, limited geographic scope, discriminatory terms, revocability, and time limitations. If such IP encumbrances cannot be avoided, the Working Group should consider making any encumbered parts of the specifications optional. Making encumbered parts of the specification optional does not affect any member’s licensing obligations, but full conformance to the specification can be attained by implementations without use of the encumbered parts.

15. Extensions

All Khronos standards are extensible, and there is a Khronos registry where all extensions can be logged and publicized <http://www.khronos.org/registry/>. Each registry consists of a single public GitHub repository which is used as a backing store for the website. To create a new registry for a Khronos standard, contact registry_manager@lists.khronos.org. Some Working Groups have chosen to host their registries directly out of GitHub repositories.

There are a number of types of specifications and extensions in rising order of collaboration:

- Vendor Extensions. Any organization can create a Vendor Extension at any time, with no collaboration or permissions needed from Khronos. Often used for exposing proprietary capabilities or meeting specific customer needs, a Vendor Extension is not ratified by Khronos and has no implementation or conformance requirement for release but should be entered into the registry through requesting registry enumerants from the registry maintainer, and use a vendor-specific prefix to prevent namespace conflicts.
- Multi-Vendor Extensions. Essentially Vendor Extensions developed and supported by multiple organizations, with no collaboration or permissions needed from Khronos (but optionally using [collaboration within the working group](#)). A Multi-Vendor Extension is not ratified by Khronos and so has no implementations or conformance requirements for release but should be entered into the registry through requesting registry enumerants from the registry maintainer. A Multi-Vendor Extension should typically use the ‘EXT’ prefix.
- Khronos Optional Extensions. Created by the Working Group and ratified by Khronos, needing at least one implementation and conformance tests for release.
- Core Specification or mandatory extension - created by the Working Group and ratified by Khronos, needing at least two implementations and conformance tests for release. Khronos optional and mandatory extensions should typically use the ‘KHR’ prefix.

Members can discuss and create their own designs outside Khronos to create Vendor or Multi-Vendor Extensions at any time. Discussions and related specifications held outside Khronos are NOT covered by the Khronos IP Framework or NDA.

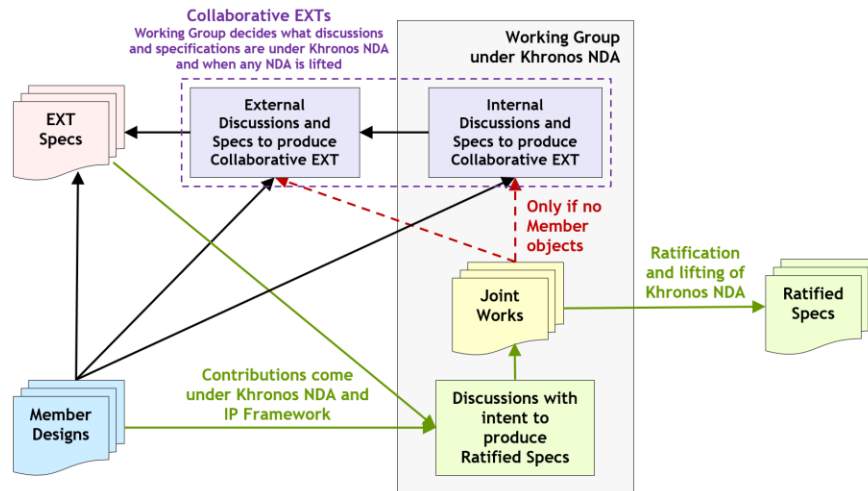
16. Collaborative Multi-Vendor Extensions

With the pre-agreement of the Working Group, members may distribute draft Vendor and Multi-Vendor Extensions within the Working Group, with no IP Framework obligations, to explore potential collaboration. If members agree to use the Working Group as a forum to create a Collaborative Multi-Vendor Extension ('CMVE'), then all discussions around the development of that extension must be clearly delimited as an activity free of IP-Framework commitments and members may decline participation without loss of good standing.

A Working Group may voluntarily agree on collaboration, conformance and implementation coverage criteria for release of CMVEs, which shall be clearly posted by the Working Group. However, Working Groups will not prevent independently developed Vendor and Multi-Vendor Extensions from being released at any time.

Joint works are outputs from Working Group design activities, normally with the intent of releasing the joint work as a ratified specification. If a Working Group decides to not take joint works to ratification but to use them as input to the design of a CMVE, a notice must be sent to the Working Group mailing list clearly outlining the change in intention, allowing time for members who have made contributions to the joint works to raise objections. Such member objections must identify which areas of the joint works would necessitate use of that member's IP, but without disclosing specific patent details. If any contributing members object, then those joint works may not be used in the design of the CMVE, however, the CMVE design may continue using original contributions from participating members or a joint work with reduced scope that does not cause member objections.

The Working Group must agree and clearly post what CMVE discussions and draft specifications are under Khronos NDA and when any NDA is lifted, including the NDA on joint works. No IP Framework commitments are triggered by the release of an unratified CMVE specification.



Collaborative Multi-Vendor Extensions and Use of Joint Works

17. Board Agendas, Voting and Electronic Votes

The Board typically meets once a month and will place any Working Group-related discussions and decisions on the next agenda. Preliminary Board agendas will be circulated to Working Chairs ahead of the meeting to ensure any needed topics are included. Preliminary Board agendas are typically circulated to the Board one week ahead of each meeting. The Board may decide to defer any votes added after the preliminary agenda is sent to a following meeting if there is insufficient time to properly consider the topic.

In cases of extreme urgency, a Working Group may request that the Board of Directors vote electronically by emailing the Managing Director. Votes conducted electronically for the Board require 100% affirmative response from all current Directors to pass. Each Director has at least seven days to vote. If an electronic vote does not receive votes from all Directors within seven days, the Managing Director may extend the voting deadline for an additional five days. If Board responses continue to be missed, the vote may be re-held at the next Board meeting as a normal vote. The voting period may not be shortened even if all necessary votes have been received before the voting deadline.

A Board electronic vote regarding a project proposal must include justification for an electronic vote. The higher the requested amount of project funding, the more likely some Directors will decide that more discussion is necessary so that the vote will not receive the necessary participation and so be deferred to the next Board meeting.

The Board holds anonymous Officer elections via electronic vote and ratifies the results in the next Board meeting. Upon election, Officers immediately assume their position.

18. Project Proposals and Working Group Budgets

Any Working Group may submit a Project Proposal at any time to release funds for initiatives that cannot be completed using voluntary efforts from members. Project Proposals should be approved by the Working Group and further the Working Group's goals. They may include engineering, outreach, or other activities. To aid in project planning, the Board may allocate an annual discretionary budget to active Working Groups. Allocated budgets may vary year to year depending on Khronos' priorities and overall financial position.

New Project Proposals will be considered from all Working Groups, including those without an allocated budget. The Board or Officers will process requests that exceed the original allocation based on Khronos' overall financial position and strategic priorities. All Project Proposals must be approved before release of funds. Approvals from allocated budgets are more likely to be approved, and may be approved faster (see below).

Working Groups with an allocated budget will be asked to periodically submit a forecast of project spending and Adopter income to assist in Khronos financial planning, but Project Proposals do not have to conform to the forecast. Working Groups do not have to spend their allocated or forecasted budget.

A Project Proposal should contain:

- Project Name.
- Date on which the Working Group approved the Project Proposal.
- Justification.
- Scope and Deliverables.
- Timeline and Milestones.
- Amount of funding requested.
- Whether the requested release of funds is from the Working Group's allocated budget.
- Whether this is a new project, or an increase in funding for an existing project with the amount previously spent.
- If contracted resources are required, whether there will be an internal or external RFP (see [RFP section](#) below).
- Any supporting links and materials.

Requests to release funds from an allocated budget requires the following approvals:

- Less than \$1,000 USD – Managing Director
- \$1,000 - \$10,000 USD – Working Group and three Officers
- More than \$10,000 – Board

Requests for release of funds in excess of an allocated budget require the following approvals:

- Less than \$1,000 USD – Managing Director
- \$1,000 - \$2,500 USD – Working Group and three Officers
- More than \$2,500 – Board

Once the Working Group has created and approved the Project Proposal the Chair should forward it to finance@khronos.org for approval, and will be notified as soon as possible, with feedback and guidance for resubmission if not approved. If approved, work, or the RFP process, can start immediately.

Working Group members are welcome to make additional financial contributions to the Working Group budget – in general or earmarked for specific projects. Khronos can manage payments, and pool contributions from multiple members for cooperative funding for designated purposes. Chairs should discuss with Khronos staff if they have members that may want to contribute to funding working group activities.

Templates for RFP and Project proposals, together with previous examples are [here](#).

19. RFP Process

All Project Proposals for contracted resources must be open to multiple bidders to encourage competitive bids and avoid conflicts of interest. The RFP process can easily take up to 12 weeks if the RFP is made public and a Contractors Agreement needs to be negotiated:

- A Working Group that needs a contracted resource first makes a Project Proposal to the Khronos Board or Officers for a 'not to be exceeded' budget allocation as in the above section on [Working Group Budgets and Project Proposals](#).

- Once the budget is approved the working group uses the Khronos Request for Proposals Template to create an RFP document. The template can be modified to suit the specific project but should provide all the information a bidder would need to submit a proposal.
- Once agreed by the working group, the RFP document is distributed simultaneously to all potential bidders that are to be invited to respond. At the direction of the Board, or at the discretion of the working group, this may be working group members, all Khronos members or publicly on the [Khronos RFP](#) page.
- The working group should set up a reflector email address that enables any interested Working Group members that are not making a proposal to receive emails from internal and external bidder and communicate on any questions and recommendations to the Working Group.
- Before the deadline for submissions has passed, Khronos will respond to questions and requests for clarity or more information from bidders. If more information becomes available, it is sent to all bidders.
- After the deadline for submissions (plus any granted requests for extensions) has passed, the Working Group discusses all bids and agrees on the winning bid. Bidders that are also Working Group members may be asked to recuse themselves for these discussions and shall not be eligible to vote to select the winning bid.
- Khronos enters into contract negotiations with the selected bidder to finalize deliverables and payment schedule. If the final negotiated amount exceeds the allocated budget, the Working Group must re-submit the Project Proposal for approval of the increased budget.
- Work can start once necessary funds are confirmed allocated and the contract is negotiated and executed by both parties.
- Khronos notifies the other bidders once contract negotiations are complete. In the case contractual negotiation closure cannot be reached the Working Group may select an alternative bidder.

The Khronos Contractors Agreement includes the standard Khronos NDA and IP Agreement, and non-member contractors can be enabled to participate in Working Group meetings for the duration of the project if necessary. Contractors should only attend Working Groups for which they are contracted. Working Groups should request Board permission for non-member contractors to attend F2F meetings with named attendees and the meetings that will be attended specifically identified. Khronos will waive F2F fees for non-member contractors and so their registration should typically be processed manually.

20. Confidentiality and Outreach

All member's contributions designated as Khronos confidential and all Working Group-generated documents are Khronos confidential. They must be marked as "Khronos Confidential" and may be shared only with other Khronos members. Also, unratified specifications, or excerpts, may not be shared outside Khronos without explicit Board permission to prevent possible ecosystem and IP issues ([see this section](#)).

Otherwise, Working Groups may decide how much detail to share publicly about their activities to promote ecosystem development and participation, and communicate high-level roadmap and other technical information. All Khronos-branded materials must be approved by the Working Group for appropriate branding, messaging and level of disclosed detail before being publicly distributed.

Any member is welcomed to produce outreach materials to promote Khronos activities, following Khronos marketing and trademark guidelines, as long as no Khronos Confidential information is disclosed.

21. Disclosure of Non-Ratified Specifications

Draft specifications, including excerpts, that have not been ratified may not be publicly disclosed without explicit permission from the Board. Premature draft specification disclosure may create ecosystem and IP issues including developer confusion over specification changes and enabling third parties to mine the disclosed specification for pre-emptive patent filings.

A Working Group may request Board permission to publicly release a specific, non-ratified specification as an exception, or permission to develop drafts in public by default: for example, a Web-related standard being developed with the cooperation of the wider Web community. Such requests should contain a clear exposition of the advantages of pre-disclosure and how they outweigh potential downsides.

If Board permission is received:

- Non-ratified specifications should carry a prominent notice that they are not ratified, and that functionality might change significantly before finalization.

- The Working Group must exercise great caution not to adopt IP-encumbered feedback and design contributions that may not be covered by the Khronos IP Framework.
- The specification should be ratified using the standard Khronos process as soon as possible after finalization.

Non-ratified draft specifications can be made available to Khronos Reviewers or Advisory Panel Members that have signed the appropriate agreements that contain non-disclosure and reciprocal IP license grant terms identical to the Membership Agreement.

22. Advisory Panels

Working Groups are encouraged to establish an Advisory Panel of invite-only expert organizations and individuals that choose not to become members but wish to provide insights into use cases and requirements for draft specifications. The Khronos Advisory Panel Agreement includes an NDA and commitment to the Khronos IP Framework, enabling detailed design contributions from Advisory Panel members to be accepted.

Advisors do not enjoy the attendance, full information access and voting privileges of Khronos membership. Advisory Panel formation and interaction guidelines include:

- Membership in Advisory Panels is by invitation only. Any Working Group member may propose any person or company for membership. Once approved by the Working Group, that member, or the Chair, can contact the candidate and provide them a copy of the Advisory Panel Agreement. Advisorship only becomes active when Khronos receives the signed agreement.
- The existence and membership of Advisory Panels is not Khronos confidential information, but to avoid creating conflict with those who have not been invited to participate, the membership list of the panel is typically not publicized outside Khronos. Advisory Panel members are able to publicly mention their participation.
- Working Groups communicate with Advisory Panels through a dedicated email list separate to the main Working Group email list and dedicated file or GitLab repositories if appropriate. All Working Group members are subscribed to the Advisory Panel mailing list and have access to the Advisory Panel file online resources. Advisors do not have access to any of the other Working Group information resources (wiki, GitLab repos, or mailing list etc.).
- Information sent to the Advisory Panel is under the discretion and control of the Working Group. Working Group members who wish to get panel feedback on some issue will propose it to the Working Group, optionally with a draft query. If the Working Group approves, it can then be posted to the Panel mailing list. Once the topic has been raised, it can be discussed freely on the panel mailing list.
- Advisory Panel members may reach out to the Working Group at any time on the Advisory Panel list.

23. Advisory Forums

Advisory Forums are a group of industry organizations and individuals who sign an NDA in order to collaborate on informing Khronos Standardization activities. Advisory Forums may choose to adopt processes from these Guidelines but are not covered by the Khronos IP Framework. They should only be consulted on non-IP-related topics such as use cases, industry requirements and drafting guidelines.

24. Individual Contributors

Working Groups can propose inviting individuals that can make exceptional contributions to join as a member with a waived annual membership fee for one year. The Board must approve the Individual Contributor invitations before they are sent, or renewed. Individual Contributor status is not normally granted to individuals employed by organizations, including non-profit organizations, which have significant business interest in results from Khronos, such organizations should be encouraged to join Khronos.

Individual Contributor invitation proposals submitted to the Board must include:

- What specialized knowledge, abilities or activities will the individual contribute.
- Which Working Groups are sponsoring the individual and a plan for the contributions at each one.
- Reasons why the individual's employer, if appropriate, is unable to join as a regular member, and confirmation that the individual is able to execute the Khronos Membership Agreement as an individual, independent from their employer.
- Reasons why they should be offered individual membership rather than being invited to the sponsoring Working Group's Advisory Panel(s).

Individual Contributor's access to email lists and document repositories will be limited to their sponsoring Working Groups. However, information from other Working Groups made accessible to an Individual Contributor by other means (cross-WG email, etc.) is not a breach of the Khronos NDA. Individual Contributors may request to be sponsored by additional Working Groups throughout their membership.

At least one month prior to their renewal date, Khronos will reach out to the Individual Contributor and ask if they wish to continue with their membership. If so, the sponsoring Working Groups should determine whether they wish to continue their sponsorship and if so, update and vote on submitting an updated proposal that includes a report of the individual's activities over the previous year. If a TSG is sponsoring an Individual Contributor, the vote must be taken at the Working Group level on the TSG's recommendation. Voting on Individual Contributor proposals and renewals will be through Causeway anonymous electronic ballots (similar to anonymous Yes/No ballot process in [Working Group Election Process](#)).

Requests for Individual Memberships should not be accepted from member companies that have recently left Khronos in order to protect membership integrity. However, if a member company leaving is detrimental to the Working Group, an invitation proposal from a working group would be considered by the Board for a key individual from that company.

25. Exploratory Groups

Any Khronos member or non-member company may propose a new standardization initiative to the Board at any time. If the Board agrees that there is potential interest, it will vote to establish an Exploratory Group to gather and document requirements and use cases from interested members and non-members to create a proposed SOW.

The Exploratory Group must NOT undertake any detailed design work until the SOW is approved by the Board. This enables companies to participate in the Exploratory Group to determine if they wish to participate or exclude BEFORE incurring IP licensing commitments.

- New Initiative Proposals are sent to the Board via the Managing Director. Such a proposal should use the current New Initiative Proposal template and include an overview of the market opportunity, industry need, competing or complementary standards, potential adopters and participants, and how the proposed activity would be a good fit for Khronos.
- The Proposal should recommend how the Exploratory Group should be organized, including whether it be open to non-members under NDA, whether non-NDA input is to be solicited, how wide the call for participation should be, and whether a fee-waived temporary membership for any key proposers is requested.
- The proposal will then be discussed at a TAP meeting, open to all members, to gather general member interest and feedback via a straw poll with optional comments to be passed to the Board. If the proposal comes from a non-member, they must execute an NDA if they wish to attend the discussion.
- After the TAP meeting, a straw poll will be sent via email to all members to gather additional feedback and comments. Members will be given a minimum of one week to respond.
- If the Exploratory Group is approved by the Board, an internal mailing list will be created and a call for participation will be sent to all members.
- The Exploratory Group may communicate externally to establish and gather wider industry interest and feedback in accordance with the agreed Exploratory Group organization.
- The Exploratory Group then attempts to form consensus on the creation of a SOW, following normal Working Group participation and voting rules. The SOW must recommend how the proposed activity relates to existing Working Groups and IP Zones. If the Exploratory Group votes to approve an agreed SOW, it is submitted to the Board.
- The Board will then review and vote on the execution of the SOW. If approved, the Exploratory Group will be disbanded and, typically, a Working Group formed, and design work started. All members will be notified and may attend or issue a Working Group Exclusion. Khronos will also issue an industrywide call for participation.
- The Board may alternatively recommend that an existing Working Group incorporate the proposed SOW activities. In this case, that Working Group must discuss and vote to approve an updated SOW, following the process for an 'additive' SOW if necessary.

An Exploratory Group should be proposed if there is interest to bring a Working Group out of Archived or Frozen status as per Khronos Working Group Lifecycle Definitions.

26. Open Source Repositories

Working Groups may use public GitHub repositories under Khronos-approved contribution and outbound licenses, typically Apache 2.0. Board approval is required if a Working Group wishes to use different or modified licenses or make other significant licensing changes. Working Groups may use the Khronos-approved dual Apache 2.0 or MIT outbound license on a strict as needed basis to enable downstream projects blocked by default Apache 2.0, but they must inform the Board, and maintain a list of dual licensed files. Note that if the repository is REUSE compliant, then the REUSE tool can be used to generate a manifest of files showing their licenses, making this task largely automatable.

Working Groups should:

- Use 'main' as the GitLab/ GitHub default branch name instead of 'master'. This is the direction being adopted by the OSS community and GitHub in particular. Working Groups should make an active 'main' branch from master, with the old 'master' edited to explain what happened and why the branch is now frozen.
- Ensure repositories are always correctly and completely licensed by incorporating [REUSE](#) into the repo and CI tests.
- Add standard files for repo metadata including CODE_OF_CONDUCT, CONTRIBUTING, COPYING, README, and LICENSE (.md or .adoc format, as preferred). Examples can be found in the [Vulkan GitLab repository](#).

27. Wikipedia Updates

Khronos welcomes Wikipedia content relating to Khronos activities. There should be no duplicates of Khronos reference materials on Wikipedia, entries should link to canonical resources on Khronos.org. Working groups should regularly review related Wikipedia pages for accuracy and completeness.

Members should be aware of Wikipedia's [Article Subject](#) and [Conflict of Interest](#) guides, which suggests posting substantive editing suggestions on talk pages and notice boards instead of directly editing affected articles with which they are affiliated.

28. Principles of Conduct

Khronos expects all members to extend respect and courtesy to their colleagues at all times.

Khronos members come from diverse origins and backgrounds and are equipped with multiple capabilities and ideals. Regardless of these individual differences, participants treat their colleagues with respect as persons - especially when it is difficult to agree with them. Seeing from another's point of view is often revealing, even when it fails to be compelling.

English is the de facto language used for all Khronos processes, communication, and documentation. However, English is not the native language of many Khronos members. Native English speakers will attempt to speak clearly and limit the use of slang in order to accommodate the needs of all listeners, and the Chair shall ensure that non-English speakers are given sufficient time and support to speak if they wish.

Khronos members develop and test ideas impartially, without finding fault with the colleague proposing the idea. We dispute ideas by using reasoned argument, rather than through intimidation or ad hominem attacks. "Reduce the heat and increase the light."

Khronos expects all members to promote Khronos and its activities positively when communicating externally. If there are disagreements, members are encouraged to work internally with Khronos and other members for positive resolution.

29. Change History

- December 2002 – First Release
- June 2004 – clarified wording for abstentions in Working Group votes and distribution of marketing and review materials
- October 2004 – added guidelines for discussing IP-sensitive issues, clarified confidentiality and outreach guidelines, refined issue resolution process, expanded online resource section, clarified Chair selection and general wording clean-up
- March 2006 – added details on Steering Committee and Technical Sub-Groups, updated confidentiality and IP discussions to reflect updated Participation Agreement, added details of Ratification process
- September 2006 – added guidelines for encumbered specifications, expanded ratification guidelines, added Chair delegation, added marketing and contractor overview to Chair responsibilities. added startup good standing rules
- October 2006 – clarifications to voting and consensus process. clarified Working Group nomenclature
- November 2006 – clarifications to email voting quorum

- February 2007 – strengthened guidelines for generation of Khronos-branded marketing materials
- March 2008 – added guidelines for Provisional Specifications and Extensions, reduced Ratification period to 30 days minimum, added suggestions for setting Working Group direction, clarified role and organization of TSGs
- December 2008 – electoral clarifications regarding representation / ownership changes and multiple elected officials from one company, added that all specification drafts during ratification be uploaded to Promoter’s subversion area, minor updates, and clarifications
- September 2009 – increased Ratification period to 45 days, clarified the election process. added guidelines around Provisional Specifications, clarified decision making by consensus
- September 2010 – clarified guidelines for specifications with related IP disclosures
- April 2014 – overall general update and re-ordering, clarifications to voting logistics and Ratification Process, added guidelines for External Advisory Panels, Wikipedia Updates, non-member contractors and Principles of Conduct
- September 2017 – added objection process for email votes, made Advisory Panels non-confidential, expanded guidelines for online tools and open-source projects, clarifications to election process, added Statement of Works, Associate and Non-Profit Members, Dynamic TSGs and Marketing Request Process. Updated TSG acronym
- January 2018 – added EXT / Vendor Extension Process
- October 2018 – clarified Statement of Work updates and added Exploratory Group Process
- October 2019 – clarified IP Committee and Ratification Processes, SOW Process and Template and Wikipedia Updates
- January 2021 – **New Sections:** Board Meetings, Advisory Forums, Open-Source Repositories, Individual Contributors, Project Proposals, RFP Process, Collaborative Multi-Vendor Extensions. **Additions:** Multiple Session Meetings, Causeway Balloting, Dynamic TSGs, Absentee Voting. **Clarifications:** IP Committee Process, Minor Specification Updates, Wikipedia Updates, Distribution of Non-ratified Specifications, Election process, Ratification Process, Liaison obligations. **Removed:** Provisional Adopter Programs
- February 2021 - Working Group budgeting process added, courtesy recording of voting intentions added, multiple session meetings clarified, process for how to efficiently manage elections where there is potential for Chair and specification editor to be elected from the same company added
- March 2021 - Licensing obligations for optional sections of IP Encumbered Specifications clarified, clarified that Board approval for Chair and specification editor to be from the same company is last resort, no voting in absentia clarified