

Khronos Intellectual Property Framework Briefing

Summary

When deciding whether to participate in a collaborative consortium such as Khronos, understanding the organization's Intellectual Property (IP) framework is one of the most important steps. This briefing document outlines how the Khronos IP framework provides protection to implementers of Khronos specifications, and the Members that contribute to their design, through precisely defined licensing obligations. This has enabled many companies, even those with significant IP portfolios, to enjoy the benefits of Khronos participation.

While we hope this briefing is useful, it does not supersede the Khronos Membership and Adopter agreements which take precedence if there are unintentional contradictions.

Khronos Background

Khronos is an industry consortium focused on cooperatively creating open API standards for graphics, compute and vision acceleration that are available for royalty-free use. Khronos has over 100 Member companies and governs specifications such as Vulkan™, OpenGL®, OpenGL ES, WebGL™, OpenCL™, OpenVX™, COLLADA™ and glTF™. More details about current Khronos Members and specifications can be found on the Khronos website at www.khronos.org.

Khronos develops API specifications and associated conformance tests that enable software applications and middleware to effectively harness hardware acceleration. Khronos specifications are 'open' in four senses: 1) any company is invited and able to join Khronos to contribute to and influence the development of its specifications; 2) finalized specifications are publicly and freely distributed at zero cost from the Khronos web-site; 3) any company can implement a Khronos specification and participating implementers can obtain a trademark license for conformant implementations and pay zero royalties to Khronos participants; and 4) developers may freely use implementations of Khronos specifications. At Khronos, 'open' does not primarily mean open source implementations of specifications, though Khronos does often encourage and support open source projects where appropriate.

The most critical aspect of collaborative creation and implementation of API standards is the IP Framework under which that collaboration occurs. An effective IP Framework balances two goals: 1) providing protection for bona fide implementers so that Khronos participants will not assert IP rights or demand royalties; 2) minimizing Member licensing obligations to protect valuable IP portfolios. Khronos operates a carefully constructed IP Framework that protects both the Khronos Membership, and participating implementers of its specifications. In broad summary, Khronos participants reciprocally simply agree not to assert IP rights against other participants implementing Khronos specifications.

Each Khronos standard has a working group that develops the specification and conformance tests for that API. While Khronos specifications are under construction, drafts and other detailed materials are typically confidential to the Khronos Membership. This is to prevent industry confusion and to protect draft specifications from submarined patent applications by non-members.

Khronos Members sign a Membership agreement that brings their contributions to the design of specifications under the cooperative IP Framework, they agree to keep Khronos draft materials confidential, and they execute a conformance test source license that enables them to participate in creating and reviewing a body of code used to test implementations for compliance with Khronos specifications. There is an annual membership fee which enables participation in any or all Khronos working groups with voting rights. Accredited academic institutions may join Khronos for a nominal annual membership fee which enables non-voting participation in all Khronos working groups.

Protection for Implementers of Khronos Specifications

Companies that wish to implement and ship an implementation of a Khronos specification under the protection of the Khronos IP Framework execute an Adopters agreement, with an associated Adopters fee, for each version of that specification. Becoming an Adopter is independent from Khronos Membership, i.e. Members that implement a specification must also become Adopters, but a company does not need to be a Member to become an Adopter.

An Adopter is provided access to the conformance tests and online submission area for the Adopted specifications so they may port, execute and upload the results of the tests running on their implementation. Once the submitted results are successfully reviewed by the working group, that implementation is conformant. The Adopters agreement includes a trademark license, so that conformant implementations may use the name and logo of the specification, and enables the Adopter to enter into the identical reciprocal IP license for their adopted specifications as Khronos Members.

Protection of Khronos Member IP Portfolios

The Khronos IP framework provides multiple mechanisms by which the IP portfolio of Members is protected as default – plus there are additional elective protective measures that Members can choose to use.

To maximize protection for Member IP the default reciprocal license grant under the Khronos IP framework is carefully minimized and does NOT cover: a) implementations that are not fully conformant, as defined by passing Khronos conformance tests; b) IP that is not essential, i.e. where any commercially viable alternative implementation techniques exist that do not need a Member's IP to be licensed; and c) any technology that is not *explicitly* contained in the specification for interoperability, meaning that underlying hardware or software implementation techniques are *not* licensed through Khronos participation.

This very narrow licensing scope often means that in practice Members are licensing very little, if any, IP. Plus, as the license grant is reciprocal between all Khronos Members and Adopters, in return for their grant each participant receives royalty-free licenses for essential IP in Khronos specifications from all other Khronos participants.

The Khronos IP Framework is designed to make licensing obligations precisely understandable: a) the only point of licensing is the instant of ratification by the Khronos Board, and ONLY essential IP in the final spec is reciprocally licensed, meaning that discussions and contributions not included in the final specification bring no licensing obligation; b) Khronos Members do not have to disclose any IP that will be included under the standard reciprocal license – so no patents are ever discussed in open Khronos meetings so that Members are not put on notice of specific patents.

As Khronos activities span a wide range of APIs, Khronos Members can explicitly withdraw from participation from certain working groups by issuing a Working Group Exclusion Certificate. If a Working Group Exclusion Certificate is in place, and the Member does not attend any meetings for the excluded working group, the Member does not participate in any way in the reciprocal licensing grant for specifications produced by that working group.

If Members have specific patents they do not want to be included in the reciprocal license, they can issue an "IP Disclosure Certificate" prior to ratification to exclude specific essential claims from the reciprocal license, regardless of whether or not those claims are associated with an explicit contribution from the Member. This means if your company has essential patents that you do not wish to license, those patents can always be ring-fenced. In practice, due to the narrowness of the reciprocal license, Members only rarely find it necessary to exclude a specific patent; in fact this mechanism has only been invoked a handful of times in the fifteen year history of Khronos Group.

Finally, before any specification is ratified, there is a Ratification Review Period of at least 42 days and all Members are notified of the start of the Review Period. Though IP Disclosure Certificates can be issued at any time during specification drafting, the notification provides a final reminder to all Members that ratifications are imminent in case they wish to take any elective actions.

Industry Inclusiveness

The Khronos IP framework specifically grants reciprocal royalty-free licenses only to Members and Adopters. This is not to exclude non-members as a goal, but it is legally problematic to grant IP licenses to an unknown entity or entities that do not explicitly agree to reciprocal terms. So, the Khronos IP framework establishes the largest possible 'raft' of written reciprocal contractual obligations - i.e. between all the Khronos participants.

Any company can become an Adopter for any Khronos specification at any time to participate in the reciprocal license and use the specification trademark for conformant implementations. Khronos Adopter fees are deliberately set low to be a very small percentage of the typical cost of implementation, typically around \$20K for a specification, and that fee covers an unlimited number of products shipping at any volume.

Non-commercial implementations of Khronos specifications, including open source projects, often cannot afford to become a Khronos Member or Adopter. Khronos has often waived Membership and Adopters fees to bona fide open source implementers of Khronos specifications that play an important role in the API ecosystem.

Finally, a common comment heard in the wider industry is that 'patents held by Khronos Members are bad', but under the Khronos IP Framework all Member patents that are essential to a ratified Khronos specification are reciprocally licensed, building a larger and stronger patent 'raft' that protects implementers of the specification against non-members asserting patents against the specification.