



Khronos Group RFP

*Render Fidelity Website*

Fall 2024

Approved by 3D Commerce

2024-10-17

# Request for Proposals

## ***Render Fidelity Website***

### Background (Informative)

The [Render Fidelity web site](#) provides users a means to compare the rendering of models using different renderers in glTF viewers. The viewers include real-time ones such as Babylon.js and <model-viewer> and path tracing glTF viewers such as Dassault's STELLAR.

The original site is available at <https://github.khronos.org/glTF-Render-Fidelity/comparison/>. The 3D Commerce Working Group (3DC) of The Khronos Group wants to have a new user experience to display this important information for a large variety of devices and sizes to better meet the needs of the glTF and 3D Commerce communities.

This Request for Proposals (RFP) is to solicit bids for the design and building of the Render Fidelity site.

### Summary (Informative)

Table 1 summarizes the key dates and requested terms. If there are any contradictions or uncertainties the other sections of the RFP supersede this one

**Table 1:** Key dates and summary of requested bid items.

Contract Type	<b>Fixed Price</b>
Contract Amount	<b>Not to exceed \$30,000 US dollars</b> , with an option to include additional work for additional cost. See Budget section for more details.
Contract Duration	Anticipate 2 months
Proposals Due	3 December 2024 at 6am PST (GMT-0800)
Bids good until	23 December 2024
Bidder notification	20 December 2024
Anticipated contract start	6 January 2025

## Scope and Deliverables (Normative)

Successful completion of this project will upgrade the existing website to meet the minimum set of requirements and specifications listed below. The currently supported viewers are listed in Table 2. Rendered images from these viewers will be included in this website.

**Table 2:** *The list of viewers in the current website along with information about their algorithm (real-time/rasterizer vs. path traced) and the supported platforms.*

Name	Rendering Type	Platform
<a href="#">three.js</a> (represented by <a href="#">&lt;model-viewer&gt;</a> )	Real-Time	Web
<a href="#">filament.js</a>	Real-Time	Web, Android
<a href="#">babylon.js</a>	Real-Time	Web
<a href="#">gltf-sample-viewer</a>	Real-Time	Web
<a href="#">three-gpu-pathtracer</a>	Path Tracing	Web
<a href="#">Dassault STELLAR</a>	Path Tracing	Windows, Linux
<a href="#">Chaos Group V-Ray</a> (via <a href="#">vray_gltf</a> )	Path Tracing	Linux, Windows, MacOS
<a href="#">Blender Cycles</a>	Path Tracing	Linux, Windows, MacOS

The selected contractor shall create a responsive designed website that provides all of the functionality of the current site (see list below) with an improved user experience.

It is not within scope to create models or viewers or make modifications to those systems.

## Work Tasks

**Phase 1** - This effort is to upgrade the website to better display the rendered images and allow easy comparison between them. The site is currently hosted as a single GitHub page. There is an overwhelming strong preference to continue using GitHub pages and related technologies; however, other solutions with justifications may be proposed. These requirements are for GitHub pages. If the bidder wishes to propose another solution, then the equivalent requirements must be met and sufficient justification must be provided for the proposed solution. If you wish to propose another solution, please contact the RFP manager for the necessary modification to these requirements. The contact must be made at least one week prior to the proposal due date.

### I. Hosting & Data Requirements

1. Website content must be auto-generated from source
  - 1.1. The source resides in GitHub in a variety of formats.
  - 1.2. The formats are dependent on the content and are described below (I.3, I.4, II.5).
2. The bidder shall use GitHub Pages and Actions to manage the web site creation and deployment.
  - 2.1. Contractor shall do initial work in their repo, including a TEST deployment.
  - 2.2. Khronos shall make the existing repo available for use by the contractor.
  - 2.3. Khronos shall identify the repo folder for deployment in the existing repo.
  - 2.4. The existing repo must remain functioning until final deployment
3. The image data sources for the rendering display are in the glTF Render Fidelity repo (<https://github.com/KhronosGroup/glTF-Render-Fidelity/>)
  - 3.1. These images are (and will continue to be) stored as PNG formatted files at 2048 x 1536 pixels per image.
  - 3.2. Different sizes can be generated and stored in the repo
  - 3.3. The number and name of the data sources will change over time; however, the location and name of the data reference files (see I.3.4) will remain the same throughout the project and beyond.
  - 3.4. One or more JSON files will be provided that has all of the necessary data for the display of the images
  - 3.5. The user displayed content shall be current within the last 24 hours of the content in the GitHub repo
  - 3.6. It shall be possible to manually start the process that updates the repo.
  - 3.7. GitHub actions shall be used to update the website.
4. Information for each model is available in JSON files. As of the release of the RFP these are
  - 4.1. List of models and parameters model-index.Khronos.json in Models directory of the glTF-Sample-Assets repo - <https://github.com/KhronosGroup/glTF-Sample-Assets/blob/main/Models/model-index.Khronos.json>.

- 4.2. Individual model information in metadata.json in each of the model directories in the glTF-Sample-Assets repo. For example,  
<https://github.com/KhronosGroup/glTF-Sample-Assets/blob/main/Models/ABeautifulGame/metadata.json>
- 4.3. Rendering parameters are currently in  
<https://github.com/KhronosGroup/glTF-Render-Fidelity/blob/main/test/config.json>.  
This may change. Every effort will be made to maintain the data structure related rendering.

## II. Website General Requirements

- 1. All website content is in English/US. There is no requirement for additional languages.
- 2. The contractor is responsible for the design of all pages and their implementations
- 3. The design of the pages must follow good web UX practices including
  - 3.1. Mobile first (except as noted in §II.6.2)
  - 3.2. W3C Accessibility compliant (score of at least 80% between 80-100%)  
(<https://www.w3.org/WAI/standards-guidelines/>)
  - 3.3. SEO friendly by appropriate use of HTML tags in <head> and <body> sections.  
The site does not require SEO management nor extensive keyword or copy optimization.
  - 3.4. Run on all devices released since 2020 supporting a standard web browser and Internet connection
  - 3.5. Work in the following browsers (version or greater)
    - 3.5.1. Chrome (129),
    - 3.5.2. Edge (129),
    - 3.5.3. Firefox (130)
    - 3.5.4. Safari (18 - MacOS and iOS only)
- 4. The site will have at least the following types of content
  - 4.1. Landing page (functions as home page for the site).
  - 4.2. Model search, filter, and select.
  - 4.3. Render example display (shows all rendered images for a particular model).
  - 4.4. Render comparison display similar to the one at W3Schools  
([https://www.w3schools.com/howto/howto\\_js\\_image\\_comparison.asp](https://www.w3schools.com/howto/howto_js_image_comparison.asp)).
  - 4.5. Descriptive pages or displays for displaying information about the process, site purpose, FAQ, rendering engines, and models.
  - 4.6. The goal is to have a high user experience by reducing time and effort to get to the image comparison.
- 5. Page designs
  - 5.1. All pages shall have a similar look & feel throughout the site. The landing page may be unique in its layout. It is the contractor's responsibility to design the site. Existing designs may be used provided Khronos is given full rights to use and modify.
  - 5.2. Khronos will supply a header and footer to be consistent with the overall look of Khronos web sites. These will be supplied as HTML fragments with necessary JavaScript and CSS files.

6. Design implementation
  - 6.1. After the design has been approved by Khronos, the contractor shall implement the design in clean HTML that passes the W3C Validation Service (<https://validator.w3.org/>).
  - 6.2. As described above, pages must be designed mobile first with the following exceptions
    - 6.2.1. Rendered image comparison content should be optimized for displays at least 1024 pixels wide. That content must also display in a reasonable manner on narrower displays down to phones in vertical display mode.
  - 6.3. The implementation of the design must allow content from external files to be included in pages during the build process.
    - 6.3.1. The included content shall be stored in files accessible by URL
    - 6.3.2. The format of these files shall be determined during Phase I of the project.
    - 6.3.3. Khronos has a preference for asciidoc markup using Antora for external files providing content; however, that is not a requirement for this project. Khronos retains the right to make the final decision.
7. Automated generation of HTML files
  - 7.1. Contractor must build and use GitHub's CI tools for automated building of the site pages and HTML content.
  - 7.2. The CI jobs must run within the Khronos account on GitHub
8. Model filter requirements
  - 8.1. The site must supply a means for filtering the list of models. All models are tagged. These may be used for the initial filter
  - 8.2. At no point will it be possible to use server-side processing for handling user input
  - 8.3. The contract may specify additional tags or other mechanisms for filtering.

### III. Website Rendered Display Requirements

1. When rendered images are displayed, the source images shall be appropriate for the display size.
2. Whenever a rendered image is displayed, there shall be a mechanism to display the following information. All content listed below is supplied by Khronos.
  - 2.1. Model name with link to source
  - 2.2. Model characteristics (size, triangle/vertex count, and extensions)
  - 2.3. Model short description
  - 2.4. Rendering engine & version
  - 2.5. Image rendering date
3. Show models when available from the display engines list below (also show in Table 1)
  - 3.1. There may not be rendered images from all engines for all models
  - 3.2. All rendered images will be provided by Khronos
  - 3.3. The list of display engines may change over time. There will be a JSON file that describes each available engine.

- 3.4. It is not in the scope of work of this RFP to generate, update, or modify the rendered images.
- 3.5. Current display engines
  - 3.5.1. three.js / <model-viewer>
  - 3.5.2. filament.js
  - 3.5.3. babylon.js
  - 3.5.4. glTF SampleViewer
  - 3.5.5. Three-gpu-pathtracer
  - 3.5.6. Dassault STELLAR
  - 3.5.7. Chaos Group V-Ray (via vray\_gltf)
  - 3.5.8. Blender Cycles
- 4. Image comparison display
  - 4.1. **This section describes the entirety of the user interaction with the rendered images. The existing site should not be used as a guide for how the contracted site shall look or behave.**
  - 4.2. The rendered image comparison display shall be a single comparison of two images selected from the display of available rendered images.
  - 4.3. A permalink shall be made available that allows a user to uniquely “share” the rendered image comparison.
  - 4.4. The comparison shall offer the users two means of viewing the images
    - 4.4.1. Side-by-side (or top-bottom for narrow displays) that allows the user to see both images at the same time making use of the available display space and image size.
    - 4.4.2. Overlay slider that the display to switch to a user-controlled slider that allows the user to swipe across an image<sup>4</sup>.
  - 4.5. The comparison tool needs to run on all devices and be responsive.

## Website Summary pages (Informative)

This section provides an informative listing of web page content that shall be part of the site. Some of the listed content may be combined into a single web page. There is nothing in this section that supersedes any requirement stated above.

- 1. Home page
- 2. About
  - 2.1. Links to Khronos pages (contact, privacy policy, terms of service, cookies, etc.)
  - 2.2. About Render Fidelity
  - 2.3. Descriptive Page for each engine (currently)
    - 2.3.1. three.js / <model-viewer>
    - 2.3.2. filament.js
    - 2.3.3. babylon.js
    - 2.3.4. glTF SampleViewer
    - 2.3.5. Three-gpu-pathtracer
    - 2.3.6. Dassault STELLAR

- 2.3.7. Chaos Group V-Ray (via vray\_gltf)
  - 2.3.8. Blender Cycles
- 2.4. Descriptive page for models. Each model does not need to be described.
- 2.5. How to submit additional models
- 2.6. How to submit additional engines
- 3. Render Results
  - 3.1. One page (perhaps paginated) that shows all models
  - 3.2. One page (perhaps the same or a variant of 3.1) that shows the results of a user-directed filtering operation on the rendered images.
  - 3.3. One page that shows a comparison between two rendered images from different rendering engines.

All of the copy in §2 will be supplied by Khronos in the format identified in §II.6.3. Most of the content in section §3 comes from the glTF SampleAsset repository<sup>5b</sup>.

## Estimated Effort and Milestones (Normative)

Khronos estimates that this project will take approximately two months. The contractor shall update the 3D Commerce Working Group at least twice during the duration of the contract. This project does not anticipate providing funding for equipment purchase, travel, or other items beyond the hours necessary to do the work.

This project will be divided into two phases. The first phase is site design and the second is building to completion. The work for each phase is described below. Khronos retains the right to terminate the contract prior to Phase 2 starting if the design is not suitable, or it appears in Khronos' best judgment no suitable design could be achieved during the initial portion of the contract.

### Phase 1

The work in this phase includes project kickoff and continues until a site design that is acceptable to Khronos is achieved. During this phase the contractor shall create their best design and take refinements and suggestions from Khronos to arrive at a final design acceptable to all. Khronos has final determination in acceptability. During this period there will be frequent meetings between the contractor and selected Khronos personnel. The frequency and duration of the meetings will be determined during the Kickoff meeting and adjusted as needed. Unless other arrangements are stated in the bid or by mutual consent, the meetings shall be no more than 60 minutes starting sometime between 1400 and 2000 UTC. All meetings are to be done using Khronos supplied Zoom account.

At the completion of Phase 1, the project will have a visual design for all portions of the site, sample responsive HTML pages for each page type, and an operational description of how the interactive features work. Khronos estimates that this work would take three weeks plus one week for final approval of Phase 1.



## Phase 2

During this phase the contractor takes the design developed in Phase 1 and

1. Creates templates for all page types.
2. Develops the automated build process.
3. Ensures that the build process correctly generates the desired HTML and related files.
4. Makes a TEST deployment on GitHub available to Khronos personnel for testing, review, and approval to install
5. Install everything from #4 on Khronos' GitHub account for final approval and operation.

Khronos estimates that this work will take six weeks using the schedule listed below. A bidder is free to propose their own schedule. Items in **bold** are Milestones and require presentation to or interaction with the Khronos project team. in *blue italic* are for Khronos approval. These add to the project duration, but are generally not billable.

**Table 3:** Khronos estimated duration for the various tasks listed in this RFP. Note that bidders are free to propose their own schedule provided the expected work completes within budget.

Phase	Milestone #	Description	Duration (week)
1	<b>1</b>	<b>Preliminary design</b>	1
	<b>2</b>	<b>Refinements</b>	2
	<i>3</i>	<i>Approval</i>	<i>1</i>
2	4	Create templates	2
	5	Automated build processes	1
	<b>6</b>	<b>Review</b>	1
	<b>7</b>	<b>Test Deployment</b>	1
	<i>8</i>	<i>Approval</i>	<i>1</i>
	<b>9</b>	<b>Production Installation</b>	1

## Budget (Normative)

This RFP is soliciting Fixed Price bids. Khronos anticipates that the total cost of this work will not exceed \$30,000. All bidders shall indicate how the effort and cost will be divided between the two phases. Bidders are free to propose a more expensive project, but must indicate what can be done for \$30,000 and what is beyond that.

The work shall be invoiced monthly reflecting work done the previous month and any other approved costs incurred during the previous month. The first billing period starts no earlier than 1 January 2025 with the first invoice submitted no earlier than 1 February 2025. Invoices shall be submitted by the 10th of the month to receive payment in the month submitted. All invoices for this work shall be submitted to Khronos on or before 10 May 2025 unless other arrangements have been made.

## Contractor's Agreement (Normative)

The selected contractor agrees to sign and adhere to the Khronos Contractor's Agreement<sup>1</sup> with Milestones and Costs entered into Exhibit B and Contractor Disclosures entered into Exhibit C.

No work shall begin, and Khronos shall be liable for no costs or expenses, until the selected contractor is in receipt of a mutually executed Contractor's Agreement.

It is important that contractors understand that, under the terms of the Contractors Agreement, Khronos will assess progress on a regular basis and reserves the right to terminate or renegotiate the contract in the event of insufficient progress or other issues.

## Bid Submission and Selection (Normative)

All bidders will be evaluated by selected members of Khronos. Khronos makes every attempt to avoid real or perceived conflict of interest in the bid review and selection process. The review process is limited to Khronos members who do not have a financial stake in the project. The selection will be made final by the 3D Commerce Working Group. It is overseen by the Bid Selection Manager.

An email list has been created - [3dc1112\\_rensite\\_rfp@lists.khronos.org](mailto:3dc1112_rensite_rfp@lists.khronos.org). All potential bidders should send a message to the list indicating their intent to submit a bid. This message does not commit you. The list of potential bidders is not disclosed external to Khronos. All questions, concerns and bid packages shall be sent to the email list. All bids are due by 6am PST on 3 December 2024. Bids received after this time may not be considered at the discretion of Khronos. Any question sent to the list will get a response and all self-identified bidders will receive a copy. A copy will also be posted to the Khronos website with this RFP. The submission must include a document that describes the bidders response to the following.

1. Adherence to and willingness to sign the Khronos Contractor's Agreement<sup>1</sup> if your bid is selected.
2. A document describing the proposed site. It is not necessary to include mock-ups, but they are not discouraged
3. Any special requirements or features, including changes of the above requirements or recommendations.

4. At least three references (by active URL) showing similar work. This may be waived in special circumstances. Please send a message to the above list for details. You will need to indicate why this requirement should be waived for you.
5. A description of how you will spend the funds, especially how the work is divided between the phases.
  - a. This description shall include how you propose to do the design phase
  - b. This description shall include details of the development phase including proposed template languages, ...
6. A list of any contracted work done for Khronos in the past 5 years.

After the bid submission deadline has passed, all submitted bids shall be reviewed. Each bid will be independently evaluated based on the responses to the required information above, the bidders experience, the bidders reference sites, previous experience with Khronos.

All bids must be good until 23 December. Khronos anticipates selecting the contractor by 20 December 2024.

## References (Informative)

1. [Khronos Contractor's Agreement](#)
2. See one of the many sites on SEO design, in particular Google Search Central (<https://developers.google.com/search/docs/fundamentals/seo-starter-guide>)
3. Image comparison slides are described in many web pages. A sufficient example is at [https://www.w3schools.com/howto/howto\\_js\\_image\\_comparison.asp](https://www.w3schools.com/howto/howto_js_image_comparison.asp).
4. Khronos GitHub Repos
  - a. glTF-Render-Fidelity - <https://github.com/KhronosGroup/glTF-Render-Fidelity>
  - b. glTF-Sample-Assets - <https://github.com/KhronosGroup/glTF-Sample-Assets>