

Color on the web CG telecon notes

2021-02-09 @ 21:00 UTC

Attendees

- Aous Naman
- Chris Cameron
- Chris Lilley (CG co-chair)
- Chris Needham
- Chris Seeger
- Fernando Serboncini
- Greg Coppa
- Jao-ke Chin-Lee
- Joe Drago
- Kai Ninomiya
- Ken Russell
- Lars Borg
- Leonard Rosenthol
- Marc Mahy
- Masaru Takechi
- Max Derhak
- Phil Green
- Pierre-Anthony Lemieux (meeting chair, CG co-chair)
- Simon Thompson
- Timo Kunkel
- Wan-Teh Chang
- Yi Xu

Administrative

Please carefully review CG rules/policies (<https://www.w3.org/community/about/>)

Please add your name to your GitHub user profile (<https://github.com/settings/profile>)

Action item: Chairs to look into emails from google.com to the mailing list going into spam folders, e.g. Chris Cameron's email with his original HDR/WCG slides went into Ken Russell's spam folder

Continue discussion on Canvas/WebGPU/WebGL

Chris Cameron continued walking the group through his [slides](#) (starting from "Part 2")

HDR rendering should be opt-in due to computational/power impact

The objective is to use native platform capabilities, e.g. avoid converting between a PQ canvas and the pixel format supported by the platform

Assuming a 16-bit float linear pixels are available, it should be possible to determine whether HDR rendering is possible

- How is tone mapping specified, e.g. a soft curve is better than a hard clamp?
- How does one preserve fidelity if the input image uses integer code values, e.g. code values that conform to BT.2100 PQ? Would adding support for 32-bit float be sufficient?
- Can platforms support HDR graphics that use integer code values instead of 16-bit float linear pixels?
- It is not clear whether MacOS and Windows support PQ graphics planes

Action item: Chair to encourage participation from Windows (DXGI / DWM), Android and Apple (Simon Fraser) folks to better understand platform capabilities and roadmap.

Assuming 16-bit float linear pixels, what HDR luminance does SDR full range (1.0) map to?

- 203 nits of the HDR Reference White as defined at [Report ITU-R BT.2408-0 Operational practices in HDR television production](#)? (An ITU Report is not a Recommendation)
- MacOS defines srgb 1 1 1 as 100 nits
- Windows defines 80 nits as default but exposes a runtime adjustable slider
- Mapping from SDR to HDR is necessary if HDR canvas can accept SDR graphics
- Pick an arbitrary default SDR luminance value for Canvas and let the platform map the Canvas to the attached display(s)?
- There are ambiguities when converting rec 709 to linear, i.e. what gamma should be used?

Should a reference tone mapping algorithm be specified?

- Tone mapping depends on many factors and is best deferred to the platform
- Platforms could perhaps be encouraged to adopt a standardized approach in the long-term, if one existed

Today WebGL is always sRGB

- Consider liaison with Khronos group, e.g. if glTF changes are needed
- Ken Russel chairs Khronos' WebGL working group and has emailed Khronos' glTF working group on 02/09/2021 encouraging participants to join the CG.

Key questions

- What is the intersection between platform capabilities and application/author requirements?
- Should WCG be specified without also specifying HDR?
 - Specification for WCG is pretty well fleshed out

- HDR users should propose a concrete approach to supporting HDR
- Broadcasters including NHK & BBC are skipping over WCG (BT.2020) and instead going straight to WCG+HDR (BT.2100) for content distribution

TODO: Looking for concrete proposals for specific pixel formats beyond 16-bit float linear pixels, e.g. rec2100-pq and rec2100-hlg

HDR support in PNG

Merging <https://github.com/w3c/ColorWeb-CG/pull/12>

- ICC profiles should be supported in addition to the proposed cICP chunk for HDR support since ICC profiles are routinely used to characterize an input/output device and color spaces
- ICC profiles are not the only way to add HDR support
 - PNG also has its own PNG-specific way to signal sRGB, that doesn't use an ICC profile.
 - EXIF has an EXIF-specific way to signal either sRGB or Adobe 1998 RGB, without an ICC profile

Action item: Leonard Rosenthal to propose prose that specifies interaction between the cICP and iCCP chunks, and post information about the pros/cons of using ICC profiles for signaling color space.

Action item: Editors to make an editorial pass on the document

W3C color workshop update

Description at <https://www.w3.org/Graphics/Color/Workshop/>

Registration is open at <https://ti.to/wcg-hdr-ws/w3c-workshop-on-wcg-hdr>

15 speaker proposals have been received and will be evaluated by the program committee during the week of February 15

Next meeting

Wed 24 Feb @ 2100 UTC

Draft agenda

- Explore constrained HDR solution (talk about non-goals)
- Linear-light color spaces in CSS Color 4 and in Canvas
- Colormapping, tonemapping, HDR metadata

