KMS Color Management Workshop Report

Melissa Wen

XDC 2023 - A Coruña - Spain
Participants

José Exposito (Red Hat)  Jonas Ådahl (Red Hat)  Melissa Wen (Igalia)
Michel Danzer (Red Hat)  Uday Kiran (AMD)  Carlos Soriano (Red Hat)
Niels De Graef (Red Hat)  Da Xue (Libre Computer)  Alex Goins (NVIDIA)
Harry Wentland (AMD)  Hector Martin (Asahi Linux)  Jeremy Selan (Valve)
Pekka Paalanen (Collabora)  Sasha McIntosh (Google)  Joshua Ashton (Valve)
Liviu Dudau (Arm)  Daniel Stone (Collabora)  Xaver Hugl (KDE/BlueSysytems)
Sebastian Wick (Red Hat)  Victoria Brekenfeld (System76)  Dmitry Baryshkov (Linaro)
Vikas Korjani (AMD)  Simon Ser (SourceHut)  Abhinav Kumar (Qualcomm)
Shashank Sharma (AMD)
Shell & Display Next Hackfest

- Brno - CZ, 24-26 April inclusive
  https://wiki.gnome.org/Hackfests/ShellDisplayNext2023

Agreements:

- **Short-term plan**: AMD driver-specific color properties
- **Long-term plan**: KMS Generic API
  - Prescriptive: A list of available hardware blocks
  - Testing: writeback, VKMS, etc.
  - New property: color_pipeline
  - New KMS object type: COLOROP
Hackfest Follow-Up

[RFC] Plane color pipeline KMS uAPI - Simon Ser
[RFC 00/33] Add Support for Plane Color Pipeline - Uma Shankar
[RFC PATCH 00/10] Color Pipeline API w/ VKMS - Harry Wentland

[PATCH v4 00/32] drm/amd/display: add AMD driver-specific properties for color mgmt - Melissa Wen
Discussions

- Conflicts between existing pre-blending and post-blending color properties
- New generic API implementation on VKMS: lessons learned
- Better testing with a writeback connector
- Variety of capabilities for color transformations and NVIDIA color singularities
- Latency issue when updating 3D LUTs
  - Async LUT update
  - Benchmarks
  - Looking for a general uAPI solution
Discussions

- Precision guarantees
  - Hardware specific implementations: segmented LUT
  - Bit-by-bit equality is a lost cause
  - Evaluate it throughout each iteration
- Very simple API first and a more complex later
- Userspace needs to always be able to fallback to shaders: no implicit assumptions
Next steps

Reference/start point: "[RFC PATCH 00/10] Color Pipeline API w/ VKMS - Harry Wentland"

- Focus on having more vendors build upon that ^^
- Check 3D LUT performance
- Don’t go too deep with VKMS
2024 Display Hackfest

Igalia HQ - A Coruña, Spain - April/May 2024

Melissa Wen :)

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