Contribution ID: **104** Type: **not specified**

Hotplug DRM pipeline components on non-discoverable video busses

Wednesday, 18 September 2024 16:00 (30 minutes)

Traditional DRM pipelines for embedded devices have no removable components, while PC-style pipelines have long time supported hotplug of the panel only, via HDMI or DisplayPort connectors.

Embedded devices being currently developed by the industry have a video pipeline whose last components, including one or more bridges, are located on a hot-pluggable add-on using a non-hotplug video bus (MIPI DSI, LVDS, parallel). On the device we are working on, the "main" board ends at a custom connector where MIPI DSI signals are present, while the add-on has a DSI-to-LVDS bridge and a LVDS panel.

A proposal as been made to add a "hotplug DRM bridge" [Ceresoli 2024] to decouple the fixed and the removable parts of the pipeline so that existing drivers can work transparently with no changes.

Another proposed approach is to mimic how connectors are added and removed for USB-C docking stations using DisplayPort Multi Stream Transport (DP MST) [Vetter 2024].

Work is in progress to support such devices in mainline Linux, but there are still aspects to clarify. Topics to discuss include:

- Any other similar use cases from the audience?
- Implementation approach: DP MST, transparent hotplug-bridge, others?
- Object lifetime issues
- Awareness of insertion and removal of components should be in the DRM core or in individual drivers?

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Session Classification: Graphics & DRM MC

Track Classification: Graphics & DRM MC