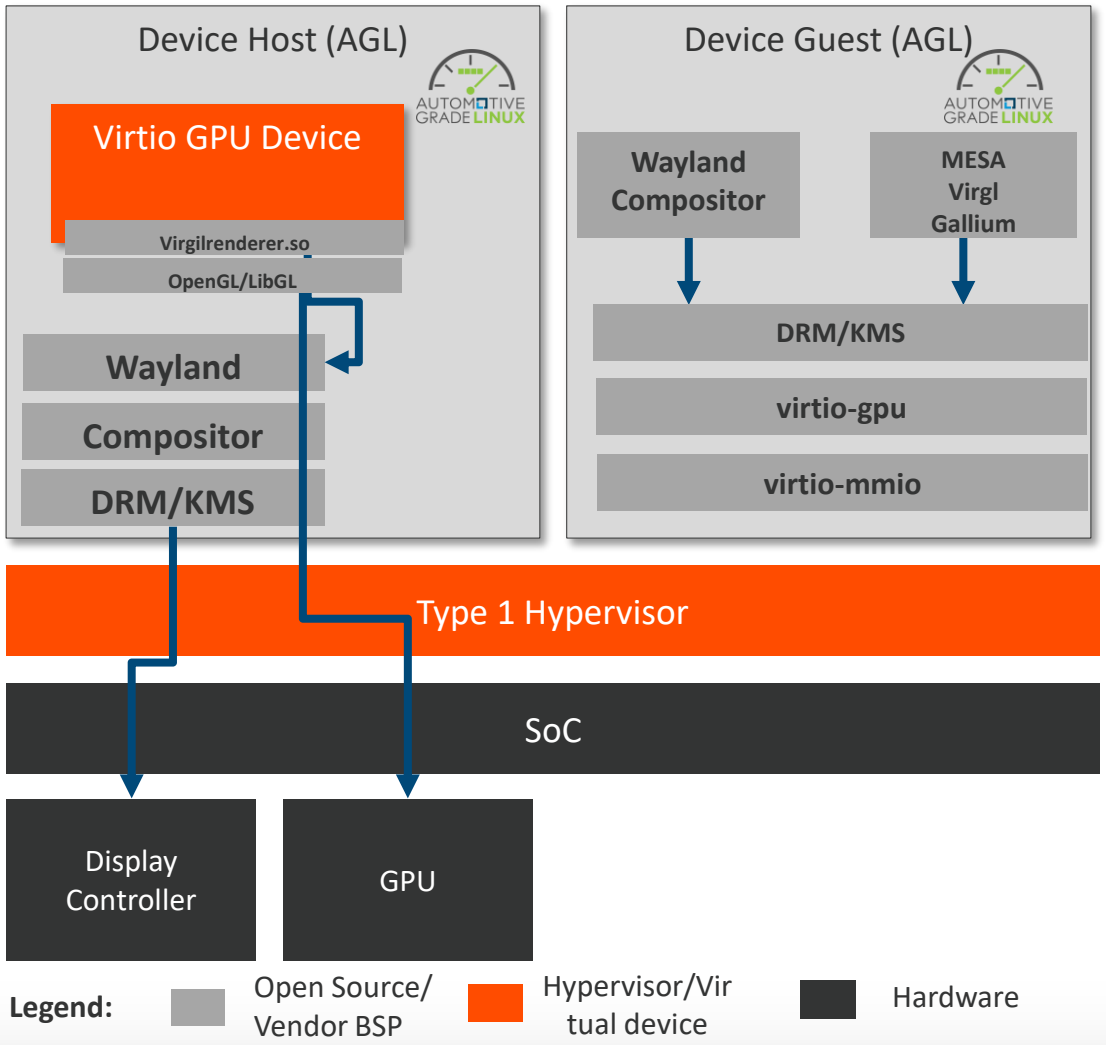
OPENSYNERGY

VirtIO GPU 3D Workshop

PUBLIC

Virtio GPU Architecture



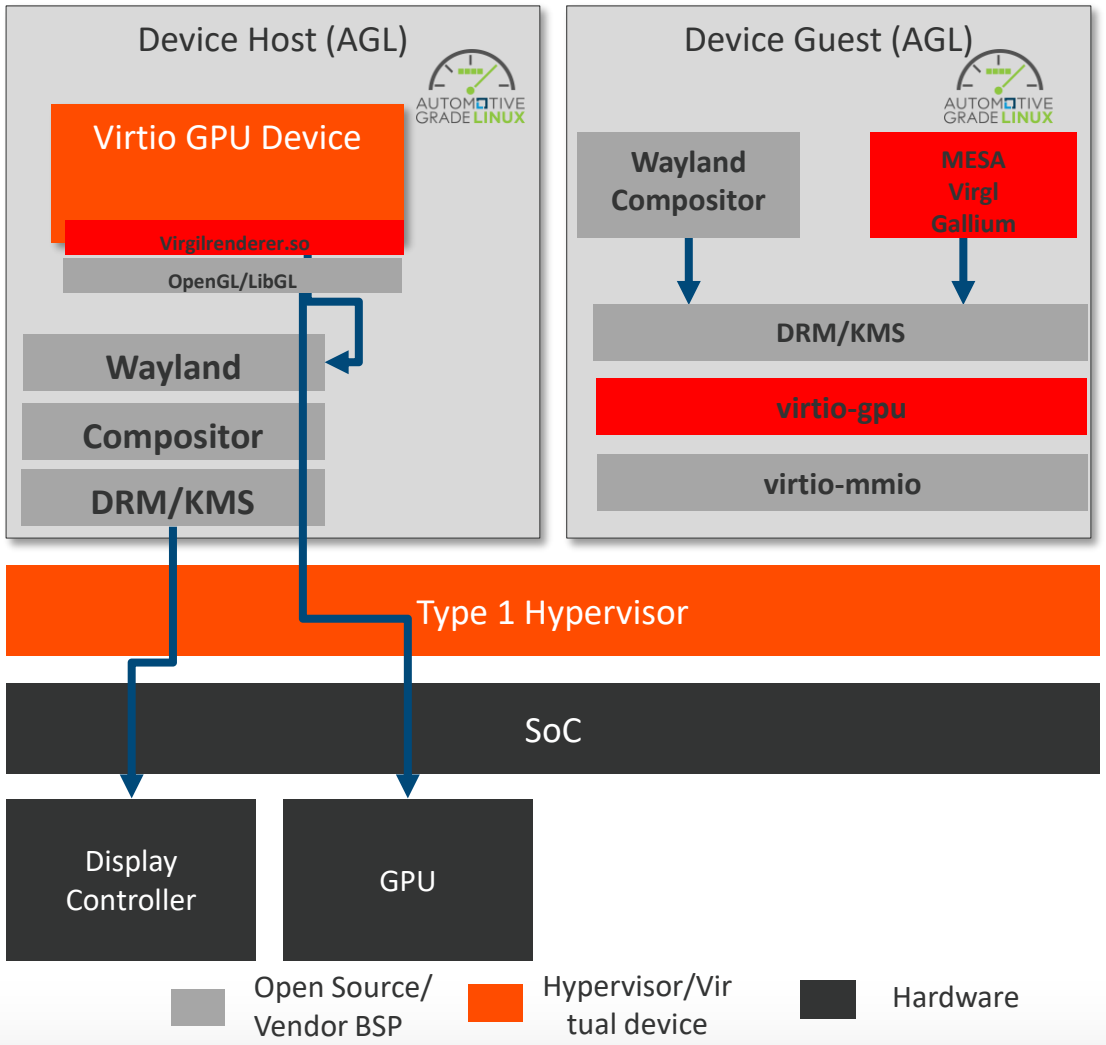
- 2D display virtualization
  - Uses native window systems
  - Zero copy by using dma buffers
- 3D GPU virtualization
  - Uses native OpenGL drivers
  - Takes abstract GPU commands from guest employing intermediate shader languages (TGSI)

Dynamic vs Dedicated Heap

- Dynamic Hostside allocation
  - Chrome OS uses Dynamic Hostside allocation and shares buffer to Guest to achieve zero copy
  - As above approch requires dynamic memory assignments which is not recomended for Automotive usecases for security reasons.
    - Guest can manipulate Host memory for malicious reasons, and special handling neede to avoid this. But it can impact the performance.
    - Runtime memory sharing should be avoided to improve security.
- Dedicated Heap Hostside allocation
  - OpenSynergy proposes to have dedicated shared heap to achieve zero copy:
    - VIRTIO_GPU_F_HOST_VISIBLE is not set:
    - SHMEM Pool, now used as drm_gem_vram.
    - Guest queries metadata.
    - Guest allocates resources from drm_gem_vram_helper.
    - The resource is sent to the Host side.

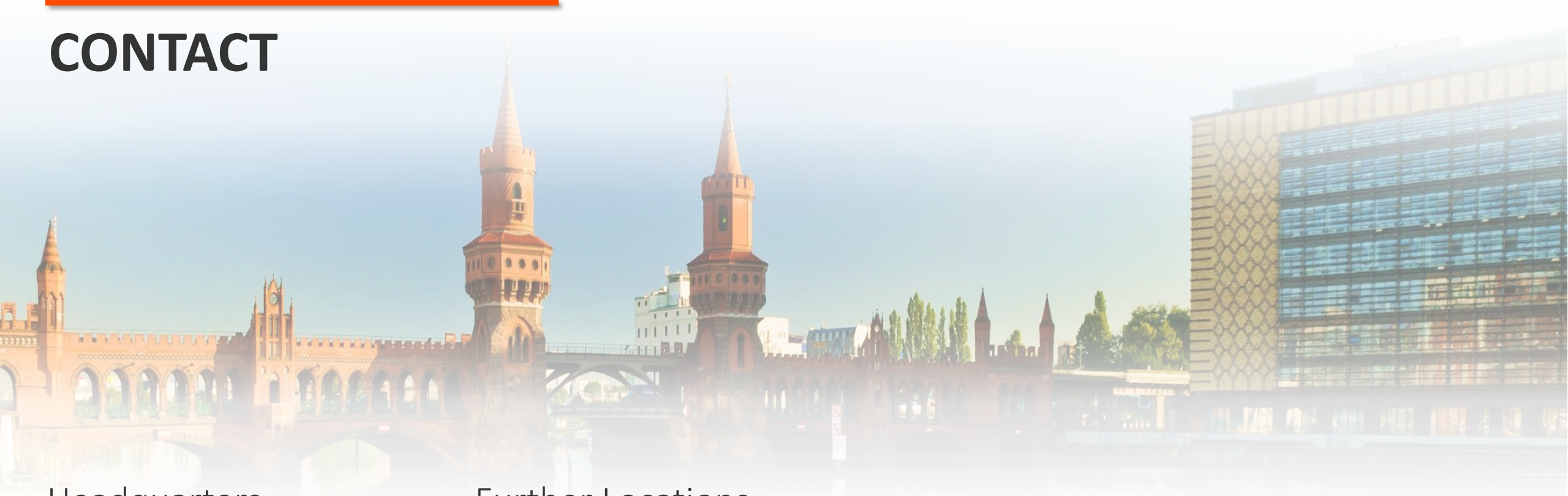
This discussion already available: https://gitlab.freedesktop.org/virgl/virglrenderer/-/issues/159

Dedicated Shared Heap in virtio-gpu



As per OpenSynergy, these blocks needs to be adapted

CONTACT



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