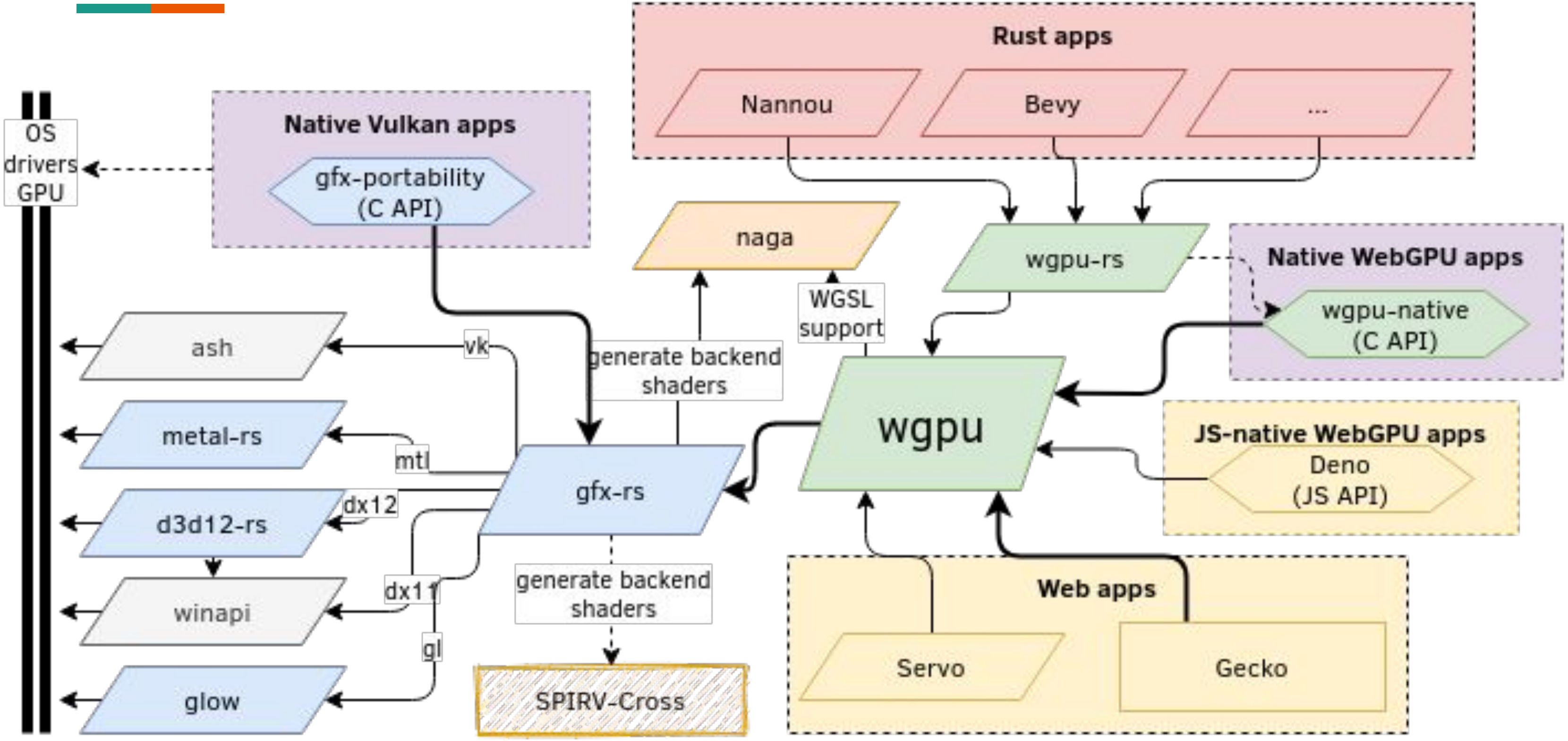
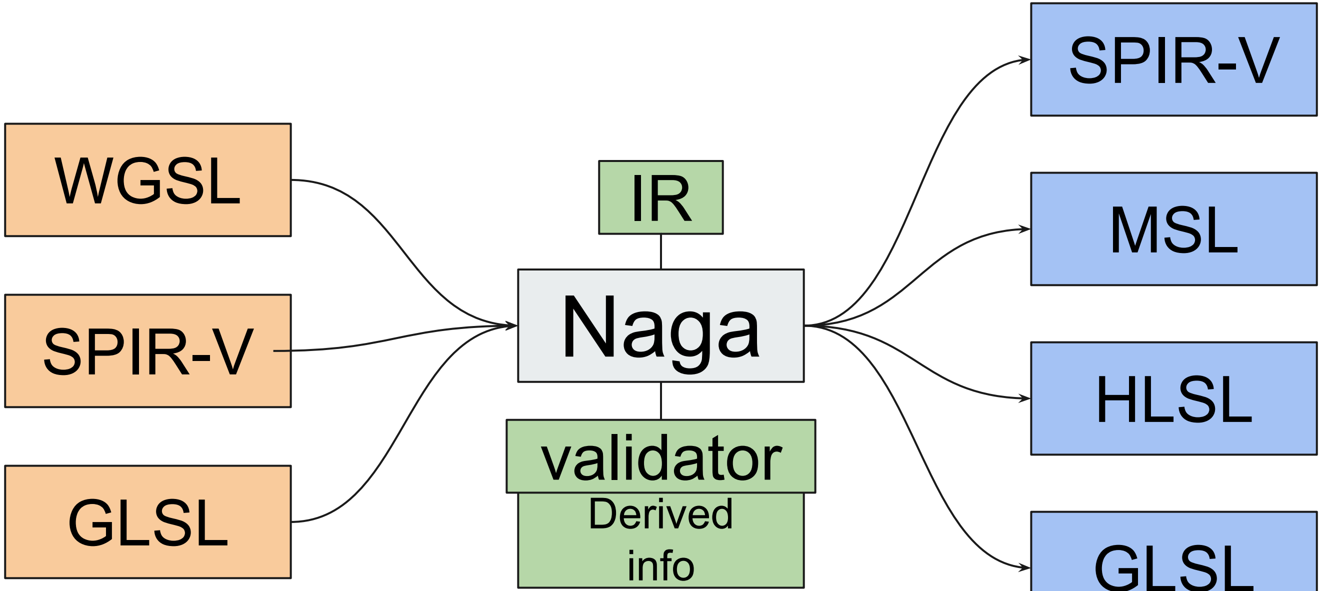
Naga in gfx-portability

towards the pure-rust Vulkan Portability layer

Gfx-rs big picture



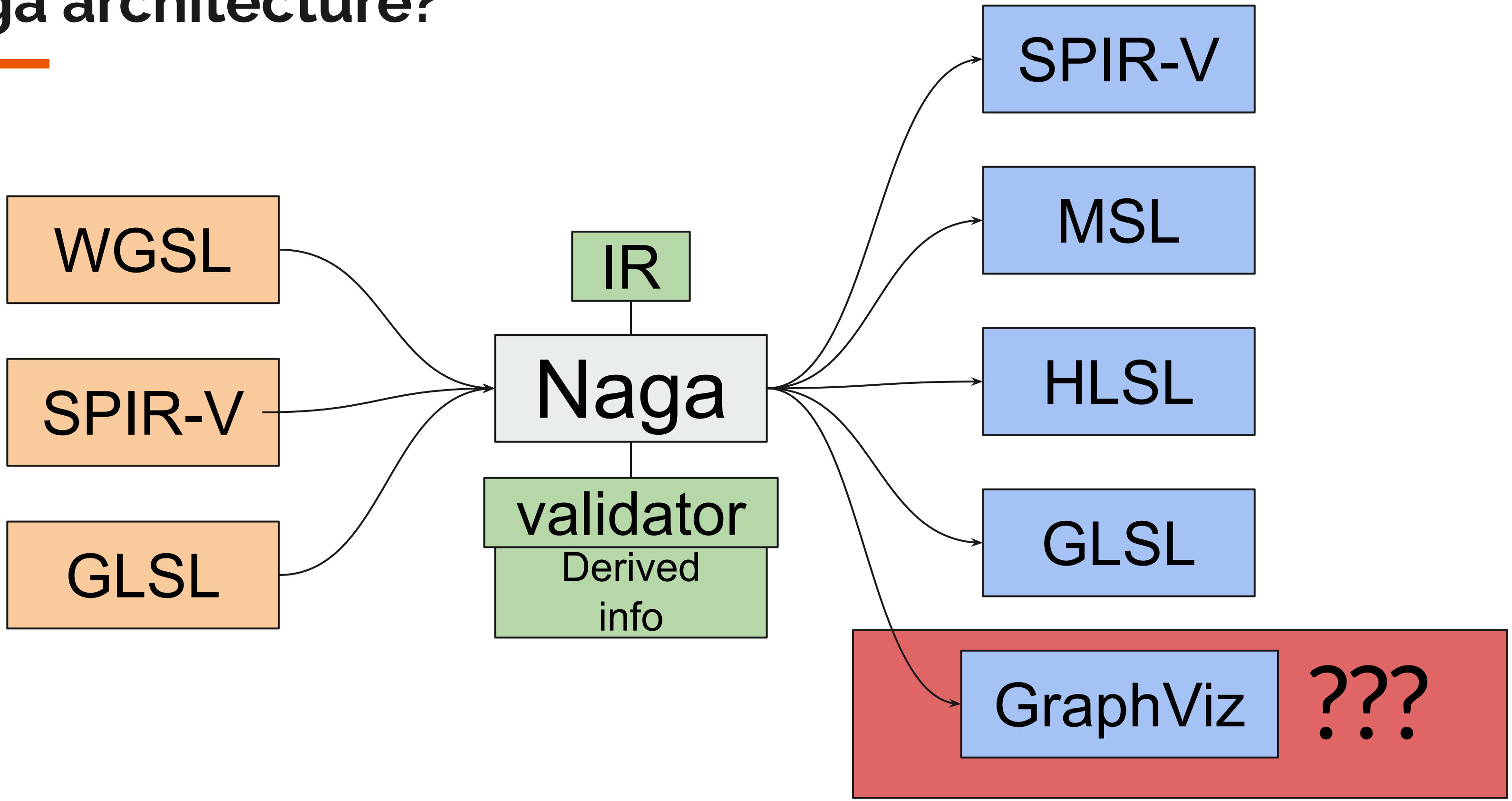
Naga architecture



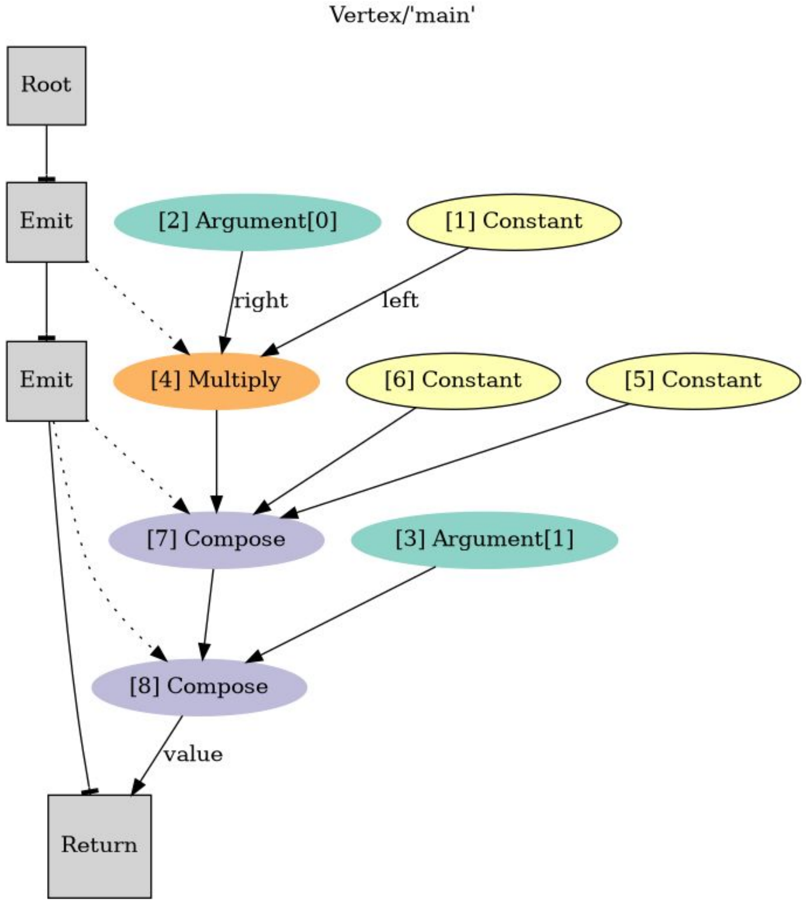
Example: MSL quad VS

```
constexpr constant float c_scale = 1.2;
struct VertexOutput {
    metal::float2 uv;
    metal::float4 position;
};

struct main1Input {
    metal::float2 pos [[attribute(0)]];
    metal::float2 uv1 [[attribute(1)]];
};
struct main1Output {
    metal::float2 uv [[user(loc0), center_perspective]];
    metal::float4 position [[position]];
};
vertex main1Output main1(
  main1Input varyings [[stage_in]]
) {
    const auto pos = varyings.pos;
    const auto uv1 = varyings.uv1;
    const auto _tmp = VertexOutput {uv1, metal::float4(c_scale * pos, 0.0, 1.0)};
    return main1Output { _tmp.uv, _tmp.position };

  }
```

Naga architecture?



GraphViz!

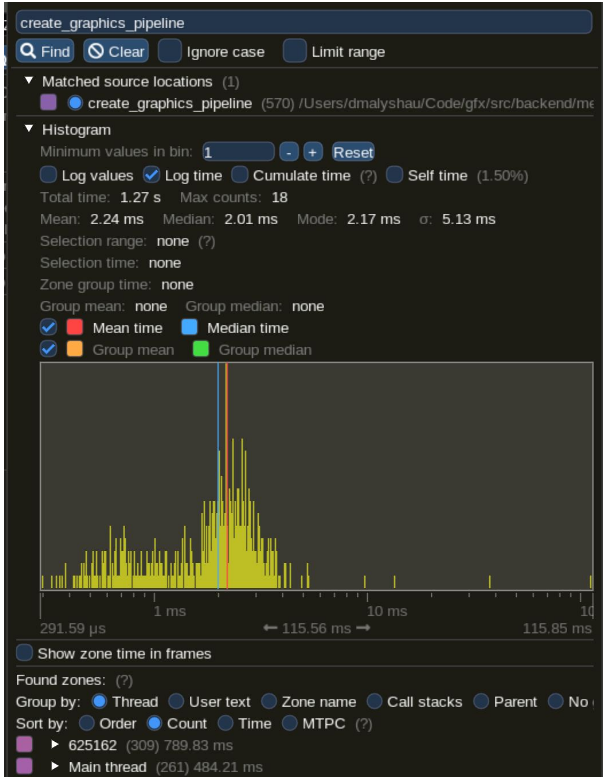

Vertex/'main'
Root
Emit
Emit
[2] Argument[0]
[1] Constant
right
left
[4] Multiply
[6] Constant
[5] Constant
[7] Compose
[3] Argument[1]
[8] Compose
value
Return

Principles

- Pure Rust
- Fast: cache-friendly, no redundant computation
- Optional end-points, minimal dependencies
- Fully safe, panic-free
- (reasonably) Strongly typed minimal IR

Demo Time!

Launch into Demo mode to check out this item set or hero's abilities



create_graphics_pipeline

Find | Clear | □ Ignore case | □ Limit range

▼ Matched source locations (1)

● create_graphics_pipeline (570) /Users/dmalyshau/Code/gfx/src/backend/me

▼ Histogram

Minimum values in bin: 1 - + Reset

□ Log values ☑ Log time □ Cumulate time (?) □ Self time (1.50%)

Total time: 1.27 s Max counts: 18

Mean: 2.24 ms Median: 2.01 ms Mode: 2.17 ms σ: 5.13 ms

Selection range: none (?)

Selection time: none

Zone group time: none

Group mean: none Group median: none

☑ 🟥 Mean time 🟦 Median time

☑ 🟧 Group mean 🟩 Group median

□ Show zone time in frames

Found zones: (?)

Group by: ● Thread ○ User text ○ Zone name ○ Call stacks ○ Parent ○ No

Sort by: ○ Order ● Count ○ Time ○ MTPC (?)

▶ 625162 (309) 789.83 ms

▶ Main thread (261) 484.21 ms