

# Background Blur WebGPU Decision Worksheet

Answer the seven questions before shipping browser background blur.

## 1. Resolution target

- 480p video calls — landscape model (144×256) is enough
- 720p video calls — general model (256×256), default
- 1080p + telemedicine — general model + mask postproc
- 4K streaming preview — consider SAM 2 instead

## 2. Backend tier you target first

- Tier 1 — WebGPU + Insertable Streams + Worker
- Tier 2 — WebGL + Insertable Streams + Worker
- Tier 3 — WebGPU + `canvas.captureStream()`
- Tier 4 — WASM SIMD + 2D canvas
- Tier 5 — disable feature, surface a toast

## 3. Cross-browser fallback ladder verified

- `navigator.gpu` adapter request actually succeeds
- WebGPU GPU blocklist checked ( $\approx 8\%$  Chrome users)
- Worker-only Insertable Streams variant tested
- Tier-4 quality acceptable on Safari 17 laptop

## 4. Mask post-processing in the compositor

- Sigmoid remap to remove the halo (steepness 8-14)
- Bilinear upsample with 1 px feather, not 4 px
- Output mask resolution matches frame resolution

## 5. Temporal smoothing for hair flicker

- Ring buffer of last 3 frames' masks
- Average sample in the compositor shader
- $\leq 5$  frames — otherwise motion lag is visible

## 6. Multi-person policy

- Both people sharp — MediaPipe is fine
- Single-person isolation — upgrade to SAM 2
- User-side toggle for which faces to keep

## 7. Build vs buy — when to pick a vendor

- Bundling with noise suppression → Krisp
- Native desktop on RTX GPU → NVIDIA Maxine
- Regulated product needing BAA / SOC 2 → vendor
- Everything else in 2026 → MediaPipe + WebGPU