

Sound Deck — Browser DAW + DSP Pipeline

Architecture skeleton · 2026-10-02

Executive framing

Sound Deck is the Mens Mercatus in-browser digital audio workstation MVP. This brief is a design/architecture artifact — Web Audio transport, timeline, mixer, AI Producer, and local Generate. Stems are DSP filter-band splits, not Demucs/ML source separation. Generate is procedural synthesis, not cloud foundation-model audio. Mac installables are scaffolded.

System thesis

Treat the DAW as a client-side DSP + scheduling pipeline: AudioContext clock, clip buffers, per-track EQ/pan/gain graph into a master bus, plus intent-driven Producer replies and procedural phrase generators. No cloud music API. Latency budget is browser audio thread + UI frame.

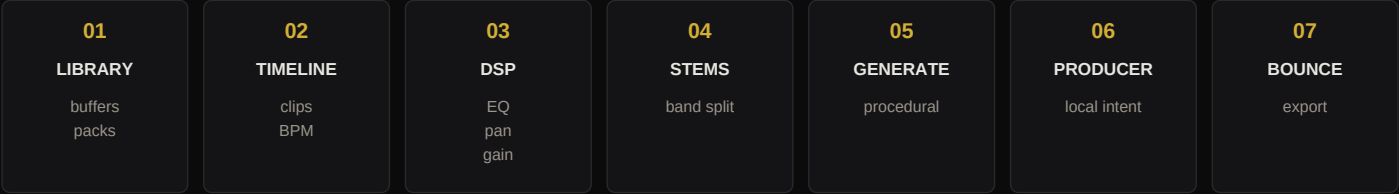
DSP · STEMS 4-band filter split (demo) NOT Demucs / ML separation Lowshelf · peaking · highshelf Per-track gain + stereo pan Master bus → destination Latency: audio thread budget	GENERATE · LOCAL Procedural phrase / scale helpers No cloud FM / Suno connector Sample synth one-shots 16-step beat → timeline @ BPM Continuation = local arrange Eval: buffer fidelity + UI lag	PRODUCER · SHELL AI Producer = local intent/regex Mic + vocal chain stubs VST slot rack (bridge stub) FL user-pack import (user-owned) Electron/desktop scaffold Status: MVP panels live
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Non-goals (explicit)

- Not Demucs-grade ML stem separation — band-split demo only.
- Not a cloud text-to-music product — Generate is procedural Web Audio.
- Not Image-Line / Suno affiliation; no third-party pack redistribution.

Schematic A — Control loop

ingest clip → schedule → DSP graph → mix → bounce



Closed client-side loop · no cloud music inference · Mac installables scaffolded

ML / systems vocabulary (as designed)

DSP pipeline	Source → EQ chain → pan → track gain → master → destination on Web Audio.
Stem split	Demo multiband filter decomposition; not learned source separation.
Procedural generate	Rule/scale/pattern synthesis into AudioBuffers — not FM audio models.
Producer agent	Local intent matching for BPM/drums/melody hints; not a hosted LLM loop.
Latency budgets	Audio callback jitter + UI 16ms frames; bounce is offline render path.
Evals (designed)	Clip schedule correctness, UI responsiveness, bounce bit integrity.

Schematic B — Runtime topology

static ES modules · optional Electron · http.server :8765

CLIENT SHELL

index.html + ES modules
Transport · timeline · mixer
AI / Generate side panel
Status: MVP in portfolio
Serve: python http.server
or portfolio /apps/sound-deck

AUDIO GRAPH

audio/engine.js clock
Per-track EQ/pan/gain
modules/stems.js band split
modules/generate.js phrases
sample-synth one-shots
No backend required for MVP

DESKTOP PLANE

electron/ scaffold present
desktop/ Mac installables
Status: scaffold — not notarized
FL pack import = user files
VST bridge = stub only
Do not claim store ship

Honest capability surface

Portfolio card may say LIVE for the web MVP panels. That means the static app loads and panels mount — not that Demucs, cloud Generate, or production VST hosting are proven. Prefer 'baking polish' for DSP realism.

DEV / DEMO CADENCE (DESIGNED)

Load app → Demo layout → tweak BPM → Stem Split a reference → Generate one-shots → bounce
No scheduled cloud scrape; all state is browser project JSON / AudioBuffers
Desktop pack: build when Electron bridge leaves stub status

Eval plan · risks · portfolio note

[How to read this artifact](#)

Evaluation axes (when live / under demo)

- Schedule correctness — clips fire on transport ticks within jitter budget.
- Stem honesty — UI labels band-split, never 'Demucs' or 'AI stems'.
- Generate provenance — buffers tagged local/procedural, no third-party model claim.
- UI latency — panel switches and scrub stay interactive on mid-tier laptops.

Primary risks

- Browser autoplay / AudioContext resume policies block first gesture.
- Calling band-split 'AI stems' would misrepresent the stack.
- Electron/VST stubs oversold as production plugin hosting.

PORTFOLIO READING GUIDE

This PDF is the Sound Deck skeleton: client-side DSP DAW with procedural Generate and local Producer.
Pair with mens-mercatus-sound-deck README + docs/ARCHITECTURE.md. No demo video in this batch.
We're baking polish — MVP panels exist; ML separation and cloud FM are out of scope by design.