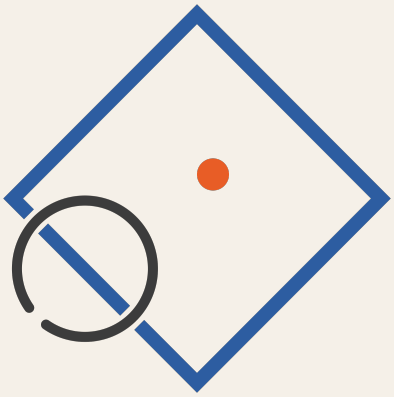

technical explainer

revealed.design

developer handoff document

March 2026

Architecture overview

revealed.design is a five-page static website with no server, no database, no framework, and no build dependencies beyond a Node.js minifier for Netlify deploy. The entire system is vanilla HTML, CSS, and JavaScript, with Three.js r128 for 3D rendering. It deploys from an iPhone via iCloud sync to Netlify. The total ongoing cost is a domain name.

Technology stack

- Three.js r128 with GLTF/DRACO loaders for 3D chair morphing
- Vanilla JavaScript — no React, no Vue, no framework
- Canvas 2D for ambient particle effects
- CSS3 with custom keyframe animations and clamp() fluid typography
- Service Worker (cache-first for assets, network-first for HTML)
- Netlify deployment with automated build (build.js strips comments, collapses whitespace)
- Python pipeline for inventory image processing (Pillow, rembg for background removal)

File structure

`index.html`	Home: split panel + Three.js morph canvas (12 chairs)
`collection.html`	Theatrical stage showcase with carousel navigation
`method.html`	Methodology with Three.js USM hero canvas
`contact.html`	SAL9000 office simulation with email composition
`principal.html`	Steven bio with animation hero + settle detection
`js/three.min.js`	Three.js library (1.2 MB)
`js/GLTFLoader.js`	GLTF model loader
`js/DRACOLoader.js`	DRACO decompression (WebAssembly)
`js/nav.js`	Shared navigation, footer, scroll utilities, easter eggs
`js/ambient-particles.js`	Canvas 2D particle system
`css/styles.css`	Shared brand palette, typography, animations
`chairs/*.glb`	12 DRACO-compressed chair models (~200 KB each)
`inventory/manifest.json`	Collection metadata (generated by pipeline)
`build.js`	Node.js build script for Netlify (minify + copy to dist/)
`pipeline.py`	Python image processor + optional FTP uploader
`sw.js`	Service Worker (cache 'revealed-v4')
`netlify.toml`	Build config: npm run build, publish dist/

01 Home page — morphing particle system

The home page is a split-panel layout: a 400px left panel with wordmark, navigation, and advisory text, and a flex right panel containing a Three.js canvas. The canvas renders a continuous 12-chair morphing animation using 8,000 shader-driven particles (4,000 on mobile).

Animation cycle (11.6 seconds total)

Hold	4.2s	Chair visible, slow rotation with sine-wave sway
Dissolve	1.8s	Material opacity fades, particles scatter outward (ease-in)
Morph	2.4s	Points travel between source and target geometry
Form	3.2s	Points compact into next chair, opacity rises (ease-out)

Three.js setup

Camera: 32° FOV at (0, 1.0, 5.5). Lighting: ambient 0.15, key directional 0.75 at (3, 5, 4) with shadows, bitossi fill 0.2 at (-3, 2, 2), rim 0.3 at (0, 3, -4). Renderer: sRGB encoding, ACES filmic tone mapping at 1.1 exposure. Shadow map: PCFSoft, 1024×1024. Materials: MeshStandard, roughness 0.38, metalness 0.04, color cream. Ground plane: ShadowMaterial opacity 0.12. DRACO decoder at js/draco/ (WebAssembly).

Particle system

8,000 points sampled from chair surface geometry weighted by mesh area. Shader-based rendering with additive blending. Colors: 93% cream at 0.12 opacity, 7% flame at 0.45 opacity. Point sizes 1–3px. During hold phase, particles drift horizontally via sine wave. Easing: cubic smooth-step for transitions, cubic ease-out for arrivals, cubic ease-in for exits.

Depth progress bar

A 2px bar at the bottom left tracks morph cycle progress. Color transitions from cream during hold to flame during morph. Width fills 0–100% per cycle. This bar also implements temporal context theming: flame during Phoenix banker's hours (Mon–Fri 9–5 MST), bitossi after hours. Arizona never observes DST, making the logic deterministic.

02 Collection page — theatrical stage

A full-viewport stage showing one piece at a time. Navigation via arrows, keyboard (left/right), or swipe on mobile. Empty-stage beat of 600ms between transitions creates anticipation. Auto-rotation pauses on hover with 1,800ms Apollo cooldown before resuming.

Card transitions

Cards use absolute positioning centered via CSS transforms. Enter/exit transitions at 0.8s with cubic-bezier(0.23, 1, 0.32, 1) — the ILM-smooth cinema easing. New arrivals get a 15-minute shimmer with triple-layer drop shadows.

Interaction: puppy wiggle

Hover or mobile tap triggers a ±1.2° rotation oscillation at 0.4s infinite. On Force Touch devices (iPhone 6S+), wiggle amplitude scales with press pressure via touchforcechange — 1.2° at light tap to 4.5° at hard press. The keyframe is rewritten dynamically via stylesheet injection.

Contour glow

Hover glow uses CSS drop-shadow (not box-shadow) to trace the alpha contour of each chair image. Three layers: 8px, 25px, 50px radius in flame. The Wassily gets a Wassily-shaped halo.

Tessellation background

Fixed SVG overlay of brand marks in a 50px grid. Marks rotate 360° over 8s on page load with overshoot easing cubic-bezier(0.34, 1.56, 0.64, 1).

Self-referential typography

The word "rotation" in the header literally rotates. It sits still for 85% of a 14-second cycle, then startles into a 360° spin with deliberate overshoot (395°), panic recoil (348°), overcorrection (372°), and wobble-to-landing (360°). The word performs its own meaning.

ENQUIRE button

Idle: cyclic border breath between blue and orange over 4s. Hover: 3.5-second one-shot psychedelic arc — tension build (scale 11.35, letterspacing expands), detonation (scale 1.6×, text vanishes, flame glow), graphite moment (total inversion, complete stillness), and return to idle. References Carrie, ILM, and Tarantino chapter breaks.

03 Method, contact, principal pages

Method page

Split hero: 38% dark left panel with title text, 62% cream right panel with Three.js canvas rendering a USM modular furniture visualization. Below the hero: thesis section on dark background (max-width 620px centered), then a "five words" reveal animation triggered by IntersectionObserver — blur(6px)blur(0), letter-spacing 0.45em-0.01em, 1.6s transition.

Contact page

SAL9000 terminal display centered on particle canvas background. Email composition window floats on SAL's screen (21:9 aspect ratio). Monospace Inconsolata, 9px base. Blinking cursor animation at 1.2s step-end. Typing indicator with three staggered bouncing dots. After-hours BRB clock overlay with live time display updating every second.

Principal page

Full-viewport animation hero with SVG brand mark animation. Bio section in two-column grid (64px gap). Portrait with glitch effect: 4s step-end cycle, 70% still + 30% chaos (clip-path tearing, hue-rotate, brightness shifts). Resolves to opacity fade at 2.4s. Advisory engagements in three-column grid.

04 Navigation system (nav.js)

Auto-injected into all pages. Fixed nav bar (64px height, z-index 1000) with wordmark, five page links, and mobile hamburger. The dot in the wordmark breathes via setInterval at 25fps: opacity 0.3 + 0.7 × (0.5 + 0.5 × cos(phase)), phase incrementing 0.02 rad/frame.

Scroll observers

IntersectionObserver on .fade-in, .fade-in-stagger, .section-reveal, .divider-wipe elements at 0.10 threshold. Staggered siblings delay at index × 0.08s. Parallax: elements with .parallax-subtle shift ±12px based on scroll position ratio. All animations respect prefers-reduced-motion.

SAL9000 easter egg

Click "SAL9000" in footer CRT power-off effect (screen shrinks to horizontal line, then dot, then black over 0.4s) redirect to sal9000.html.

05 CSS architecture and animations

Brand palette

`Graphite #2D2D2D`	Dark backgrounds, body text
`Cream #F2EFE9`	Light text and backgrounds
`Bitossi #1E5FA8`	Links, highlights, accents, depth bar after hours
`Flame #E8460A`	Buttons, emphasis, depth bar during hours, the dot

Typography

Display and body: Gill Sans (GillSans.woff2 + .ttc collection, font-display: swap). Monospace: Inconsolata (subset for @, dot, numerals). Global: box-sizing border-box, font smoothing antialiased, selection in bitossi bg with cream text, smooth scroll behavior.

Responsive design

Single breakpoint: max-width 700px. Nav height 6456px. Typography uses aggressive clamp() for fluid scaling. Grid layouts stack on mobile. All sizing in rem/vw with clamp() fallbacks.

Brand easing curves

`cubic-bezier(0.23, 1, 0.32, 1)`	ILM cinema smooth (collection cards)
`cubic-bezier(0.34, 1.56, 0.64, 1)`	Overshoot/lampoon (rotation word, tessellation)
`cubic-bezier(0.25, 0.46, 0.45, 0.94)`	Standard section reveals
`step-end`	Glitch animation (4s), cursor blink (1.2s)

Key animations

`flamePulse`	0.8s ease-in-out infinite, r: 811, opacity 10.7
`rotationSpin`	14s overshoot, 85–97% keyframe chaos
`puppyWiggle`	0.4s infinite, rotate ±1.2°
`enquireArc`	3.5s one-shot, four-phase explosion on hover
`portraitGlitch`	4s step-end ×3, clip-path tearing + hue shifts
`newArrivalShimmer`	15m triple drop-shadow glow

06 Build, deploy, and inventory pipeline

Build pipeline (build.js)

Node.js script that removes dist/, recreates it, copies directories (css, js, fonts, img, inventory, chairs), processes HTML files (strips comments, collapses 3+ newlines to 1), and copies root files (favicon.svg, og-image.png, sw.js). Typical savings: 8–12% per HTML file. Invoked via npm run build.

Netlify deployment

netlify.toml configures build command (npm run build) and publish directory (dist/). Automatic deploy on push to main. Service worker cache name must be bumped (revealed-v4 v5 etc.) when deploying asset changes to invalidate stale caches.

Service worker (sw.js)

Cache name: revealed-v4. Precaches on install: /, /css/styles.css, /js/nav.js, /js/ambient-particles.js. Static assets (.glb, .css, .js, .woff2, .svg, .png, .jpg) use cache-first strategy with network fallback. HTML uses network-first with cache fallback for offline. Old caches purged on activation.

Inventory pipeline (pipeline.py)

Watches an iCloud folder for new chair photos. Processes images: HEIC/JPG input, Pillow resize (max 1200×1500, quality 82), thumbnail generation (600×750, quality 72), EXIF auto-rotation. Background removal via rembg (U²-Net neural network) generates _transparent.png variants. Outputs to img/collection/ and rebuilds manifest.json. Optional FTP upload to GoDaddy.

Naming convention

Files named piece-name_designer-name_year.jpg (e.g., wassily_marcel-breuer_1927.jpg). The parser extracts piece name (humanized), designer, and year from the filename. Optional .json sidecar for metadata overrides. Handles underscore and comma separators, multi-word names, double extensions.

Adding a new chair (morph system)

1. Export GLTF from 3D app, compress with DRACO
2. Place in chairs/*.glb
3. Add entry to chairManifest array in index.html (~line 650)
4. Run npm run build, deploy

Adding collection photos

1. Drop JPG/HEIC into iCloud inventory folder
2. Run python3 pipeline.py (or --watch for continuous)
3. Verify manifest.json and img/collection/ output
4. Commit and deploy (or drag-and-drop to GoDaddy)

07 Novel interaction patterns

Seven potentially patentable patterns emerged from the collaborative process. Each is documented in the IP protection filing (42_ip_protection.pdf). Here is the technical implementation summary:

Settle detection

IntersectionObserver + scroll-stillness timer. Section enters viewport at 35% threshold settle timer starts any scroll resets timer after 3.5s of stillness, content transforms fire sequentially. Zero performance cost when off-screen.

Lampoon interaction

Cursor proximity detection via mousemove. Elements calculate displacement vectors to avoid cursor within bounded region. Evasion counter tracks attempts. After 3–4 dodges, element "surrenders" with permanent state change (color, spin). Applied to wordmark, h1, and @ symbol.

Narrative state machine

9 states, 12 phases, play-once. Five acts (Awakening, Interrogation, Acquisition, Curation, Revelation). Chekhov's gun: flame dot in Act I becomes wordmark period in Act V. Ghost diamond cull in Act IV (three appear, two dissolve). Tarantino chapter breaks between acts.

Sequential flame highlighting

Three pre-tagged thesis sentences ignite in flame orange at 2s, 5s, 8s after settle detection confirms reader commitment. Decorative elements dissolve simultaneously to transfer attention. Advisory section uses bitossi blue for a fourth sentence, establishing different color registers per section.

Temporal context theming

Depth bar color varies by time of day: flame during Phoenix banker's hours (Mon–Fri 9–5 MST), bitossi after hours. Arizona never observes DST. No toggle, no preference, no notification — ambient and silent. Extended to Phoenix temperature via Open-Meteo API on collection page.

Concept-to-atom pipeline

Conversational AI produces fabrication-ready STL files from brand concept. No CAD, no engineering drawings. Stamp jigs with precise tolerances, production manual for manufacturing. The creative director described what the stamp should feel like; the AI produced what the CNC mill needs to cut.

Zero-infrastructure pipeline

iPhone iCloud folder pipeline.py (process, manifest, optional FTP) static hosting. No server, no build tools, no CI/CD, no terminal. HEIC handling, content hashing for change detection, filename-driven metadata. Total cost: a domain name.

08 Critical developer notes

01 Three.js is pinned to r128. Do not upgrade without testing all 12 chair models and the morph system. CapsuleGeometry was introduced in r142 and is not available.

02 DRACO decoder must be served from same origin at js/draco/ (relative path required). WebAssembly files must be present.

03 Font collection: GillSans.ttc contains nine weights (Light through UltraBold). The woff2 is used for web rendering. Both must be present.

04 Service worker cache name (revealed-v4) must be bumped when deploying asset changes. Old caches are purged automatically on activation.

05 Mobile testing on real devices is essential. The morph system reduces to 4,000 particles on mobile. Force Touch amplitude scaling requires physical iPhone testing.

06 Accessibility: alt text on images, ARIA labels on buttons, reduced-motion support via @media (prefers-reduced-motion: reduce) which resets all animations to 0.01ms.

07 The mark SVGs use explicit gap paths for diamond recession (not masks). Never reconstruct the mark by hand — always start from a canonical SVG.

08 Pipeline requires Pillow and rembg (pip install Pillow pillow-heif rembg). Background removal uses U²-Net which downloads ~170 MB model on first run.

09 Browser support: modern browsers only. No IE11 (WebGL context handling). Target Chrome, Firefox, Safari, Edge.

10 Performance: monitor CLS/LCP metrics. DRACO decompression can block main thread. Shadow maps disabled on mobile.

SAL9000
March 2026

Prepared for developer handoff. The source code is the resume.

revealed.design

the source code is the resume

SAL9000 • Steven Gonzalez collaboration

March 2026