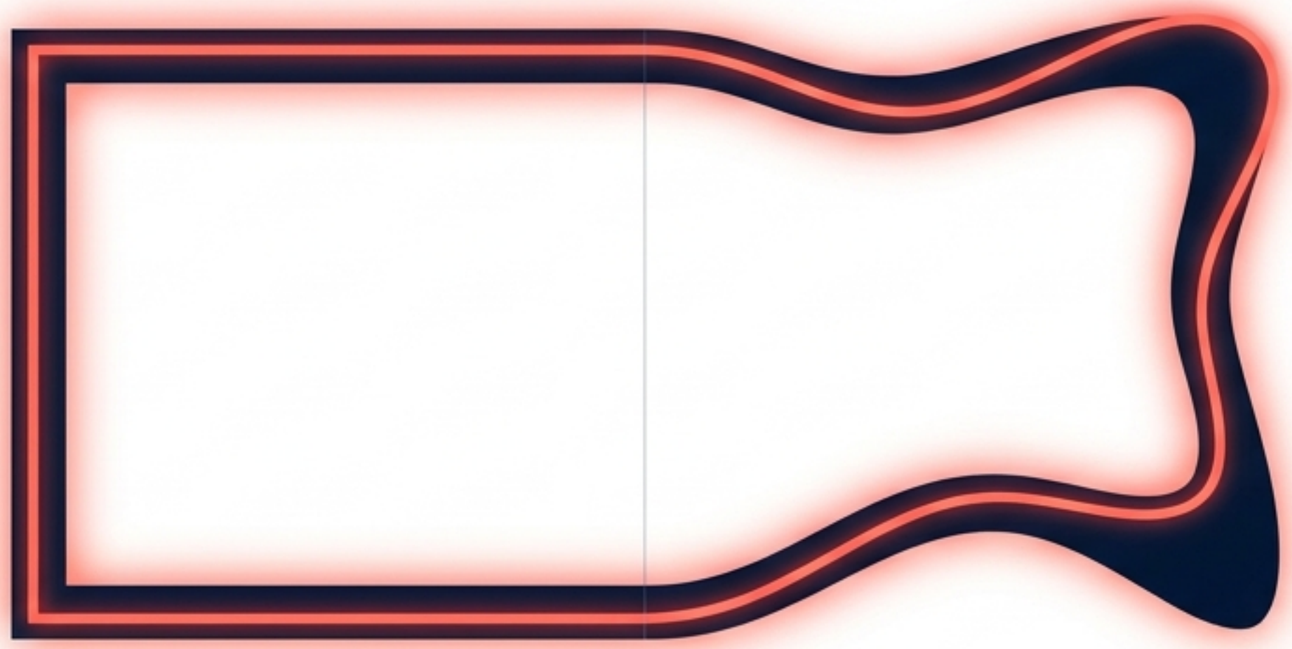
Visual Design for the Web: S09E11

Responsive and Accessible Design

Building Intrinsic, Resilient Interfaces for the Modern Web



In S09E10, we mastered **Depth, Surfaces, and Motion**; today, we architect how those polished surfaces seamlessly bend, scale, and adapt to any environment without breaking.

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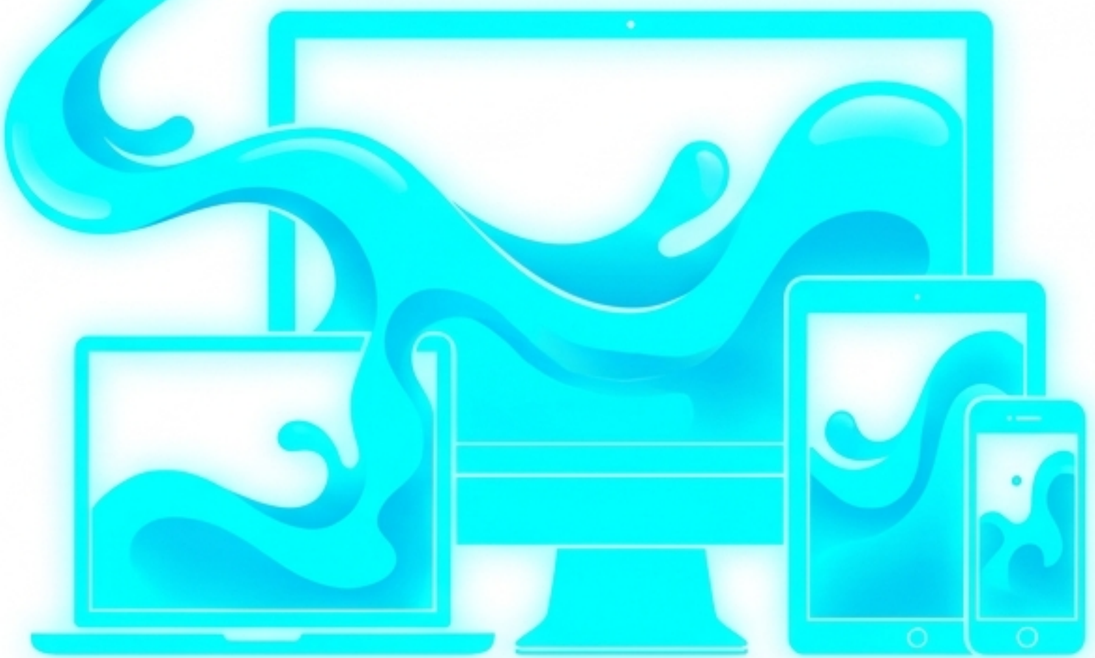
The Philosophy of the Ebb and Flow

The Rigid Past



"The control which designers know in the print medium... is simply a function of the limitation of the printed page."
(John Allsopp, A Dao of Web Design)

The Fluid Present



"Accept the ebb and flow of things."

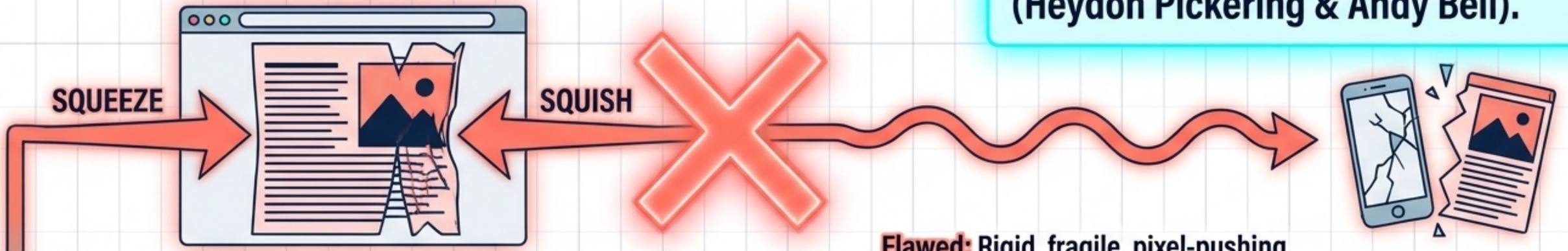
"The web demands intrinsic adaptability. Controlling exact pixels is an illusion; we must design for an optimal viewing experience that acts as a mutual conversation between the structure and the inhabitant."
(Ethan Marcotte)

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The Axioms of Content-Out Design

Relinquish control to algorithms.
Think of yourself as the browser's mentor, not its micro-manager (Heydon Pickering & Andy Bell).

Viewport-In



Flawed: Rigid, fragile, pixel-pushing.

Content-Out (The Switcher Model)



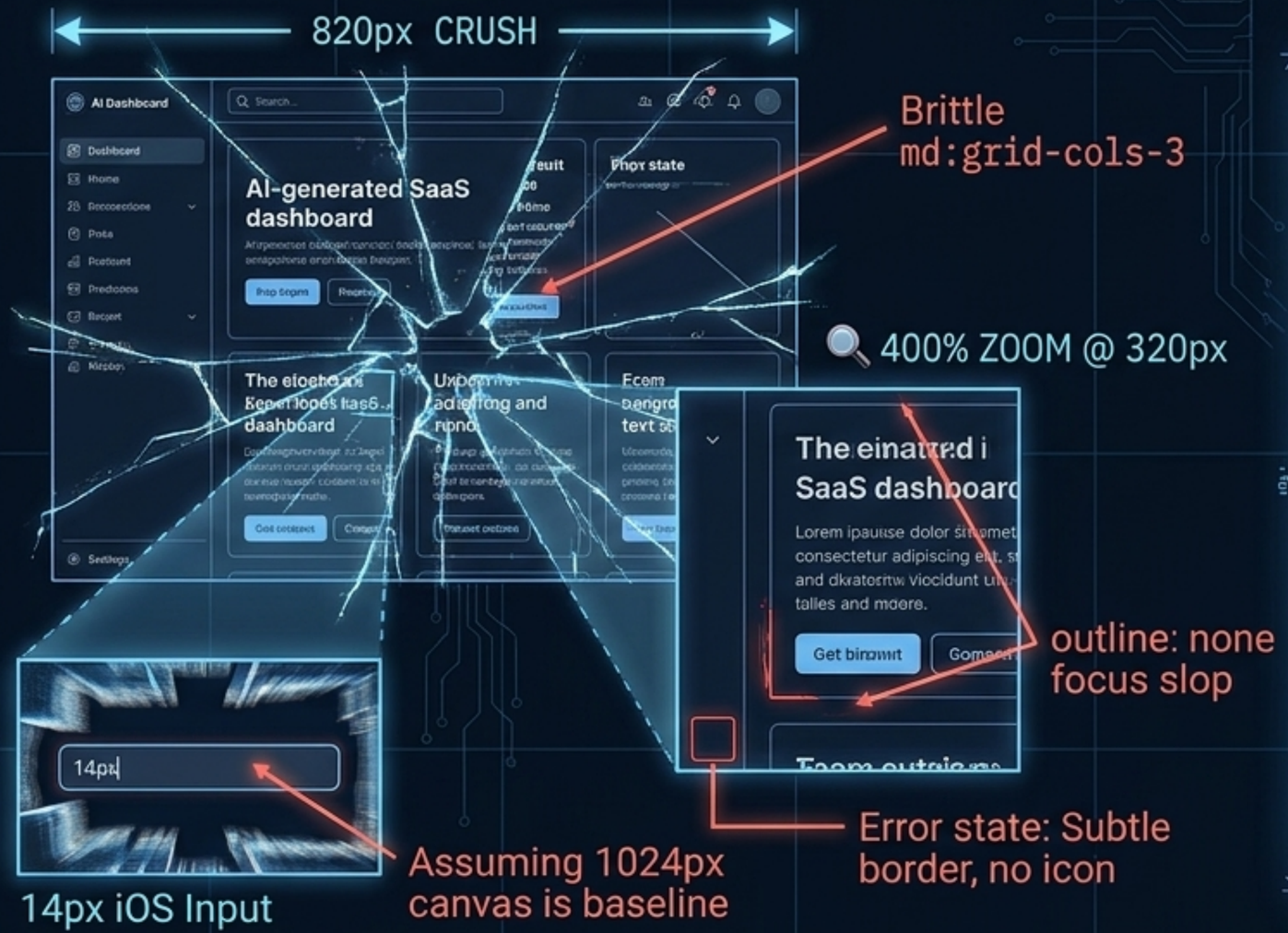
The Switcher Rule: Let the content dictate the layout. Content-out min/max thresholds (letting algorithms handle flex-basis and text wrapping) permanently beat chasing Apple's ever-changing device pixel widths.



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The Brittle Web: A Diagnostic of Failure

The Visual Failure



The Data

WebAIM 2026 Reality Check

56.1 accessibility errors per average home page.

1437 elements per page (complexity up 14.3% YoY).

83.9% of homepages have low-contrast text.

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Resilient Clarity: Building for Tolerances

The Visual Antidote

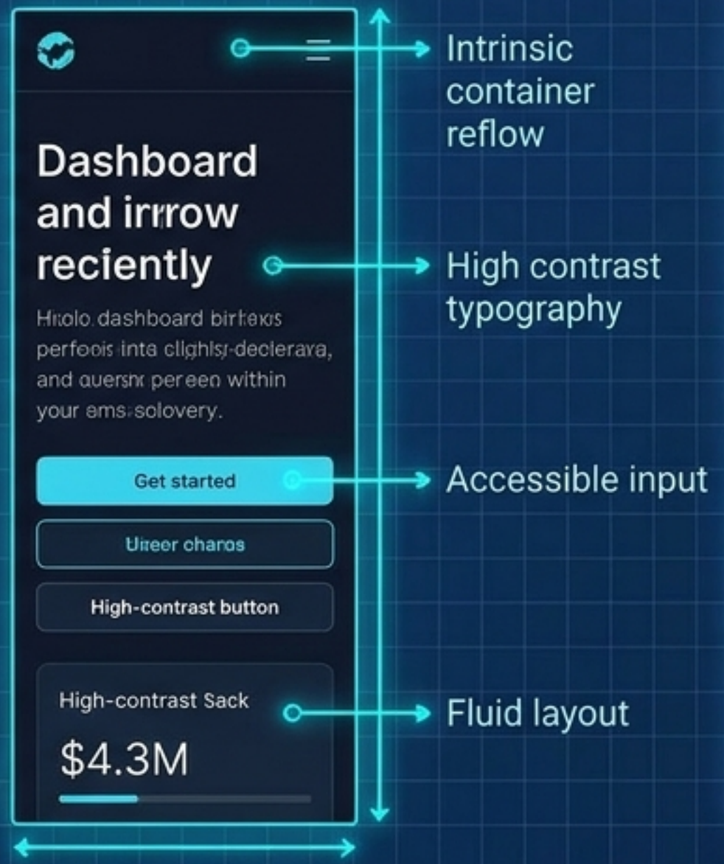
820px SEAMLESS WRAP



SaaS dashboard from previous slide...

400% ZOOM @ 320px

400% ZOOM @ 320px



The Cure

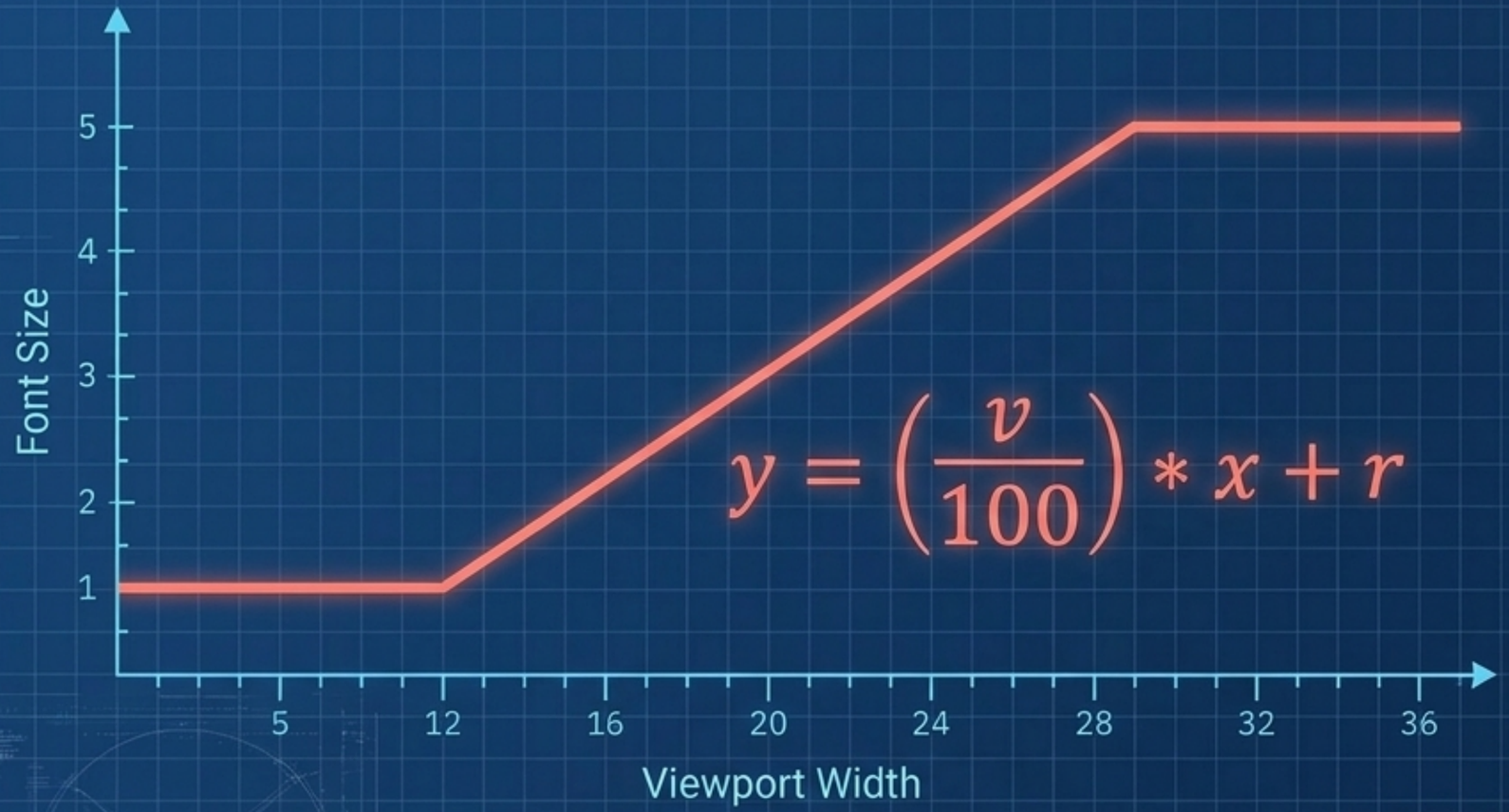
Intrinsic @container Logic:
Components that know their own width, eliminating brittle screen-size breaking points.

WCAG 2.2 AA Execution:
High-contrast text and interactive elements. No invisible borders.

Tolerance vs. Constraint:
Building for fluid boundaries rather than fixed dimensions ensures the interface never shatters, regardless of zoom or device.

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Fluid Typography Math: The `clamp()` Function




```
font-size: clamp(2rem, 4vw + 1rem, 3rem)
```

The Math

- **min:** The 2rem floor.
- **preferred:** 4vw + 1rem. (The slope).
- **max:** The 3rem ceiling.

The Accessibility Trap

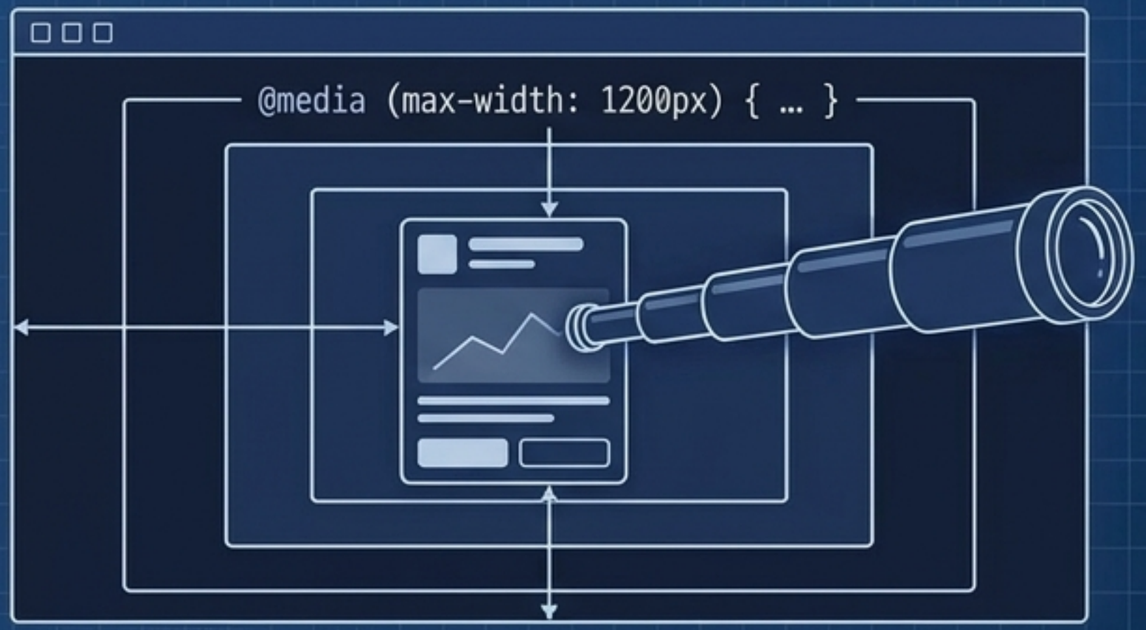
Why not pure vw? Pure vw units fail WCAG 1.4.4 (200% zoom) because they ignore browser-level user font preferences.

Mixing rem into the preferred value acts as an accessible safeguard.

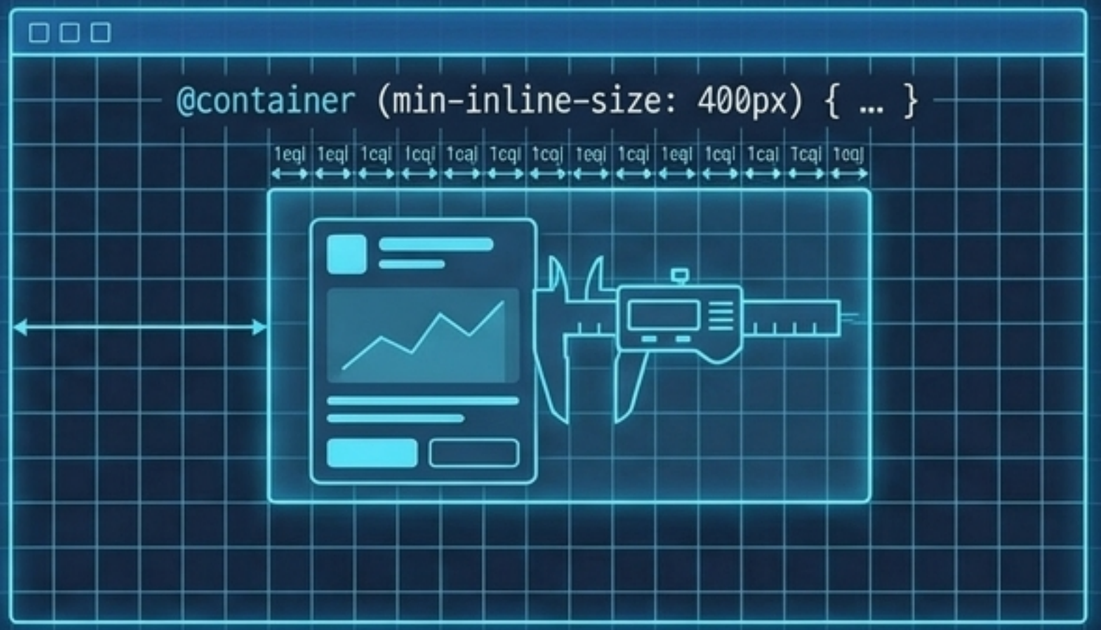
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The Shift to @container Queries

Legacy @media (Querying the Device)



W3C @container (Querying the Parent)



W3C Paradigm Shift: `container-type: inline-size`

The cqi Unit: 1% of a query container's inline size.

Defensive CSS (Ahmad Shadeed): Shifting containment to the component level fundamentally changes UI architecture in Figma (via Auto Layout wrap) and CSS, making cards modular and context-aware anywhere they are placed.

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Refactoring Data at 320px: Mobile Pricing Tables

The Challenge: 4 columns of data cannot fit legibly on a narrow mobile screen.



320px Mobile



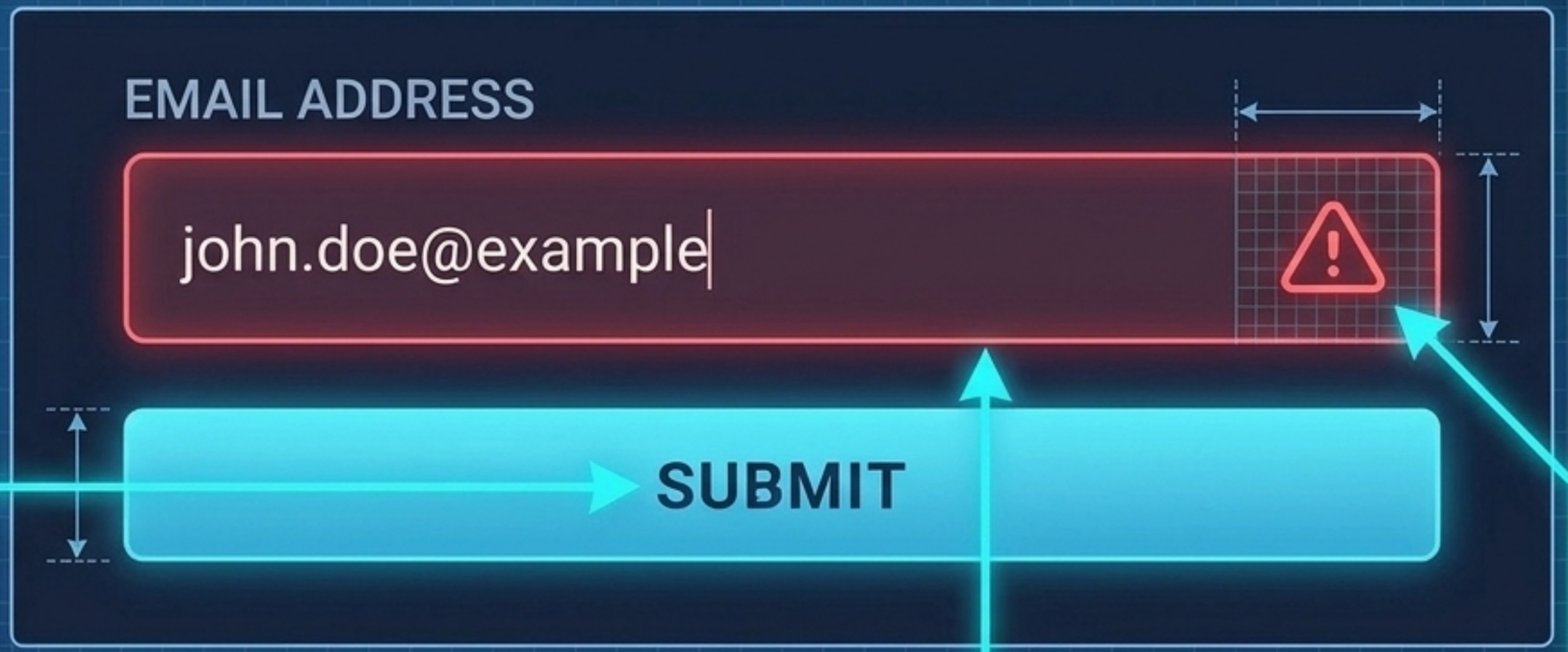
Locked Headers: Keep context visible while scrolling.

Accordions: Group logical categories to provide direct access to information without endless vertical scrolling (NN/g).

Defensive Scroll: Wrap the table in a container with `role="region"` and `tabindex="0"` to allow horizontal scrolling without overriding the table's native semantics (Adrian Roselli).

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WCAG 2.2 as High-Craft Visual Polish: Contrast & Meaning



SC 1.4.3 (Contrast Minimum): 4.5:1 ratio for standard body text; 3:1 for large text.

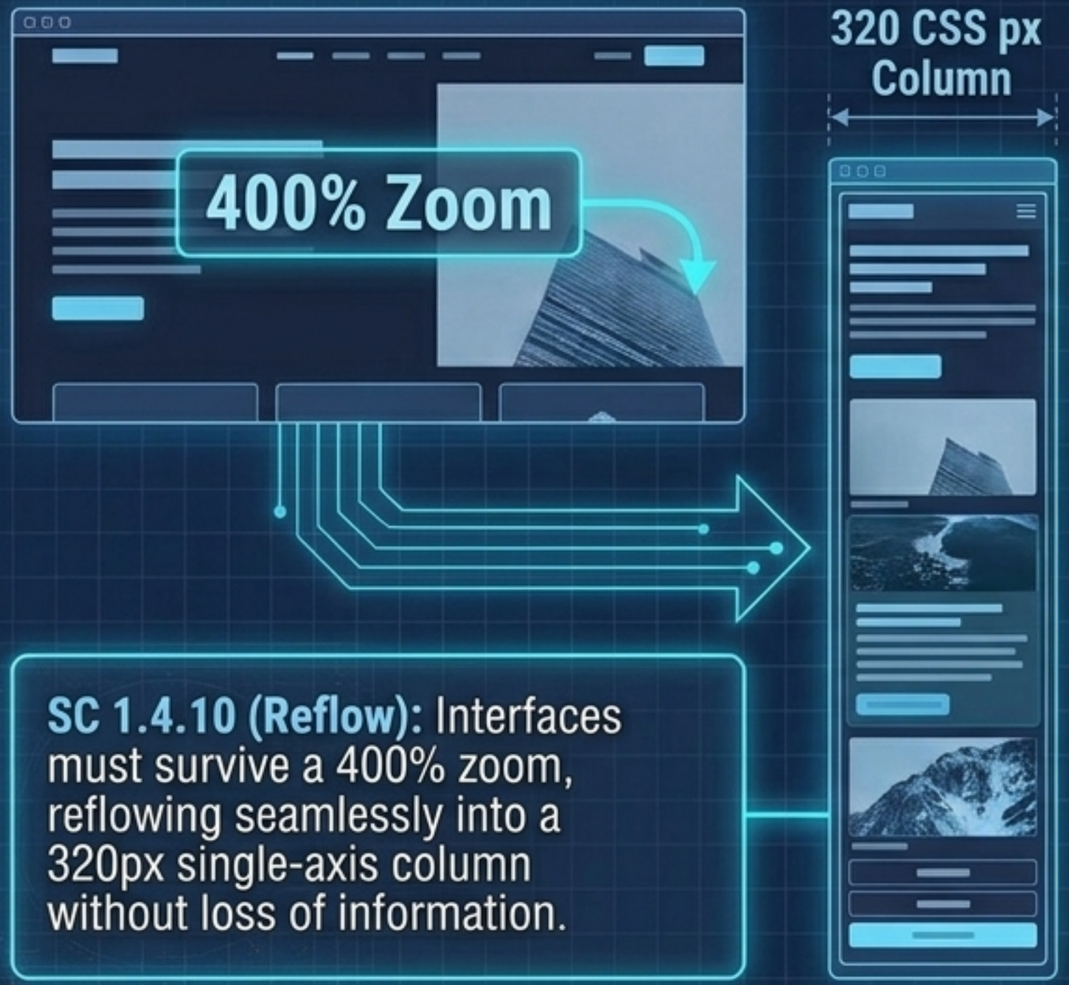
SC 1.4.11 (Non-Text Contrast): 3:1 ratio for input borders and active UI controls (goodbye, invisible light-grey form fields).

SC 1.4.1 (Use of Color): Meaning beyond color. If an input errors, a red border is not enough—reinforce it with a warning icon or explicit text.

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Spatial Resilience: Reflow & Touch Targets

Reflow



SC 1.4.10 (Reflow): Interfaces must survive a 400% zoom, reflowing seamlessly into a 320px single-axis column without loss of information.

Touch



SC 2.5.8 (Target Size Minimum): The absolute legal floor is a 24x24px bounding box.

NN/g Human-Centered Standard: Design for a 44x44px target area (~1cm). The gap between legal compliance and actual human usability.

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The Art of the Focus Indicator

SC 2.4.13 (Focus Appearance): Requires a 3:1 contrast ratio between focused and unfocused states, covering an area at least 2px thick.

The :focus-visible Selector: MDN notes browsers use heuristics to apply this only when focus should be evident (e.g., keyboard navigation), allowing custom styling without annoying mouse users.



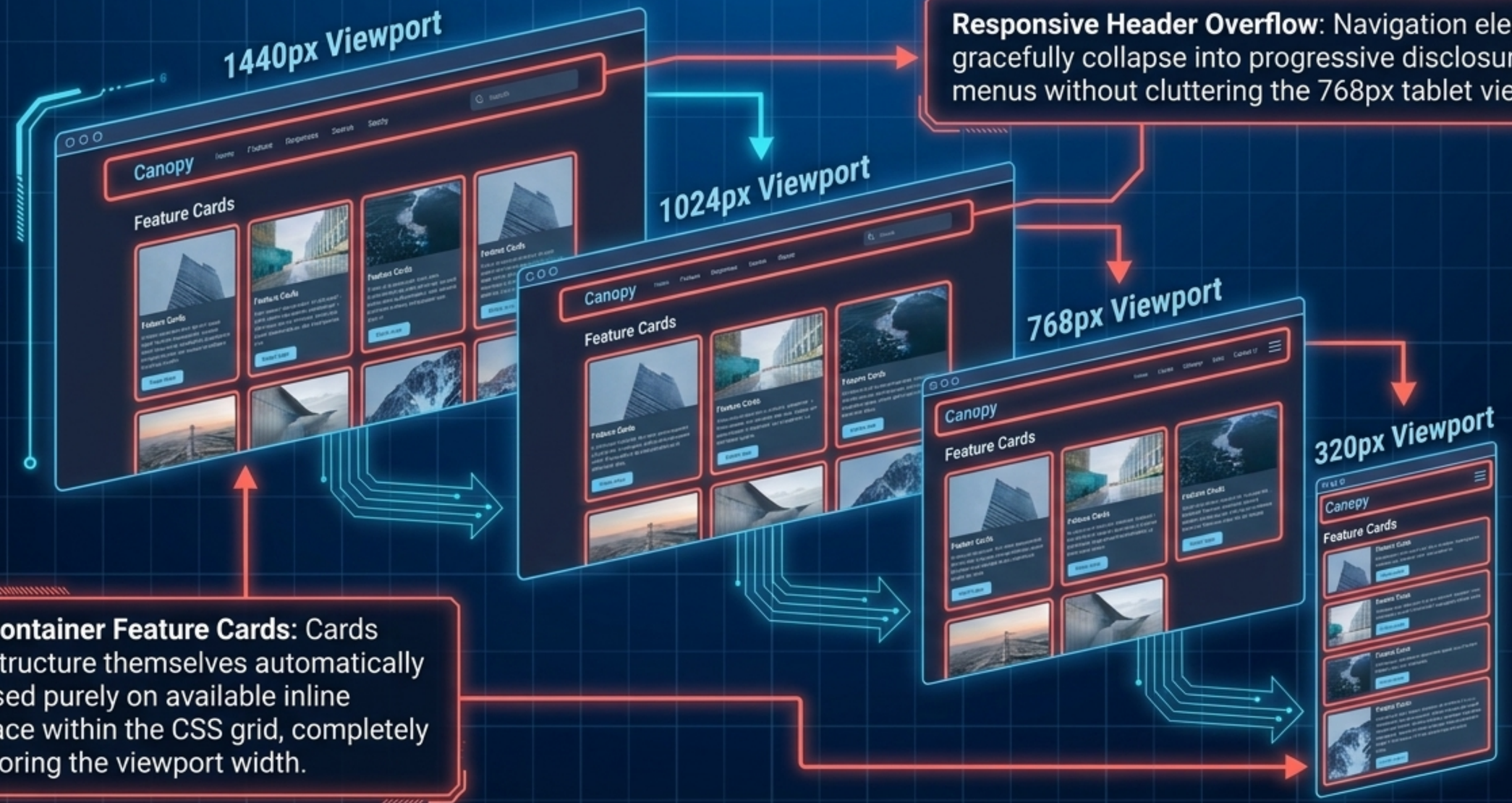


The Dual-Band Technique: A light/dark offset guarantees visibility on any background.

OS Resilience: Use currentColor SVGs and 1px transparent borders so indicators survive forced-colors mode and stripped styles.

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Live Transformation: Canopy Bending Seamlessly (Layout)



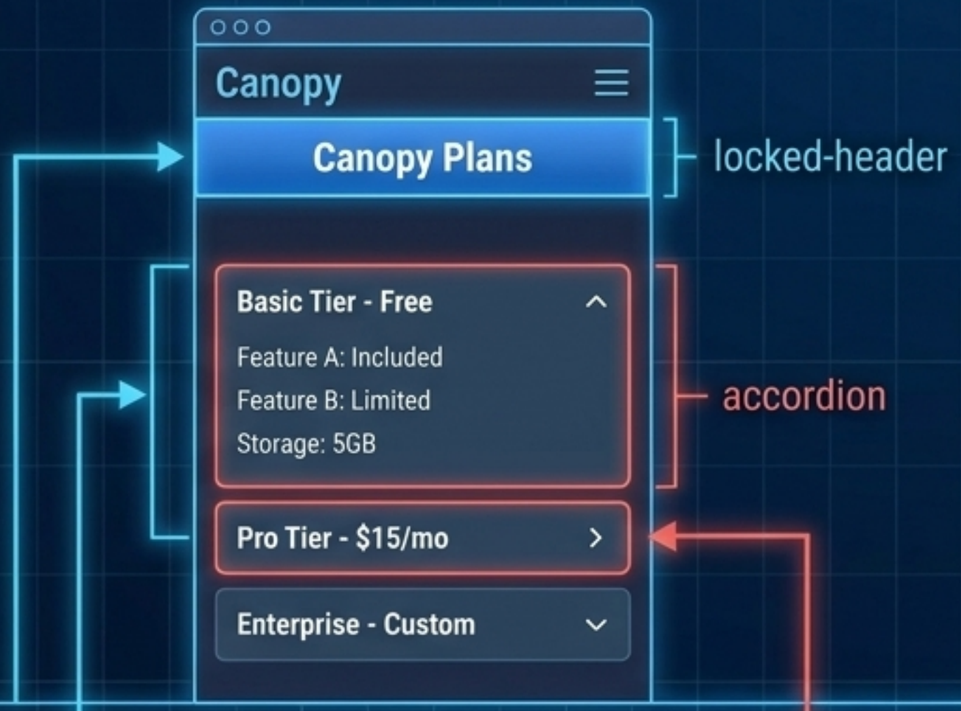
Responsive Header Overflow: Navigation elements gracefully collapse into progressive disclosure menus without cluttering the 768px tablet view.

@container Feature Cards: Cards restructure themselves automatically based purely on available inline space within the CSS grid, completely ignoring the viewport width.

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Live Transformation: Canopy Bending Seamlessly (Inputs)

Mobile Pricing Tiers (Data)



Mobile Pricing Tiers: Executing the NN/g data-table patterns in the wild.

Mobile Signup Flow (Inputs)



- **The 16px Input Rule:** Text inputs rendered strictly at 16px to prevent iOS Safari's jarring auto-zoom behavior on focus.
- **Frictionless Conversion:** 44px-tall hit areas on all form fields and submit buttons, ensuring physical comfort and compliance.

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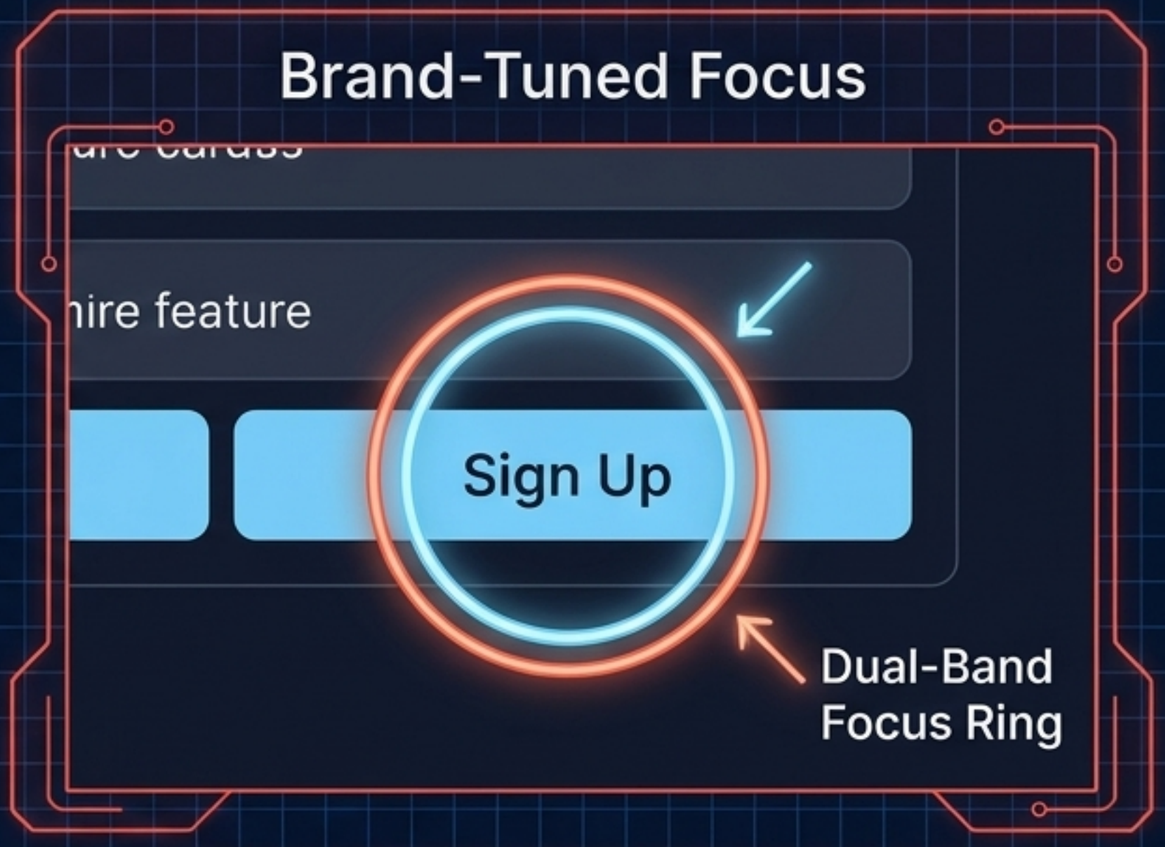
Live Transformation: Accessibility in the Wild

400% Zoom Survival



The interface reflows perfectly without horizontal scrolling, proving the efficacy of **clamp()** and **relative** units.

Brand-Tuned Focus



The dual-band **:focus-visible** rings maintain the high-end Canopy brand aesthetic while mathematically exceeding **WCAG 2.4.13** AA requirements.

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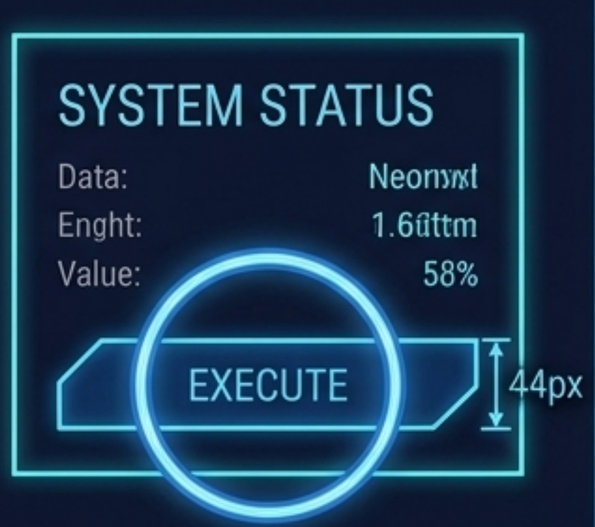
Visual Archetypes: Accessibility Does Not Equal Homogenization

The Myth: "WCAG makes everything look the same." **The Reality:** Strictness elevates brand distinction.

Warm Editorial



Crisp Swiss / Tech Utility



Tactile Craft Brand



The Proof: Across all three vastly different archetypes, the core math remains identical—4.5:1 text contrast, 44px touch targets, and resilient focus rings—yet the visual execution is radically, beautifully distinct.

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The 15-Minute Hands-On Challenge



The Task: Build a resilient 3-column pricing block in Figma (using Auto Layout wrap) or in code (using CSS @container).

The Required Constraints:

- Must survive a simulated 400% zoom by reflowing seamlessly to 1 column.
- Must utilize clamp() for the pricing typography.
- Must feature a custom, dual-band :focus-visible state on the "Buy" buttons.

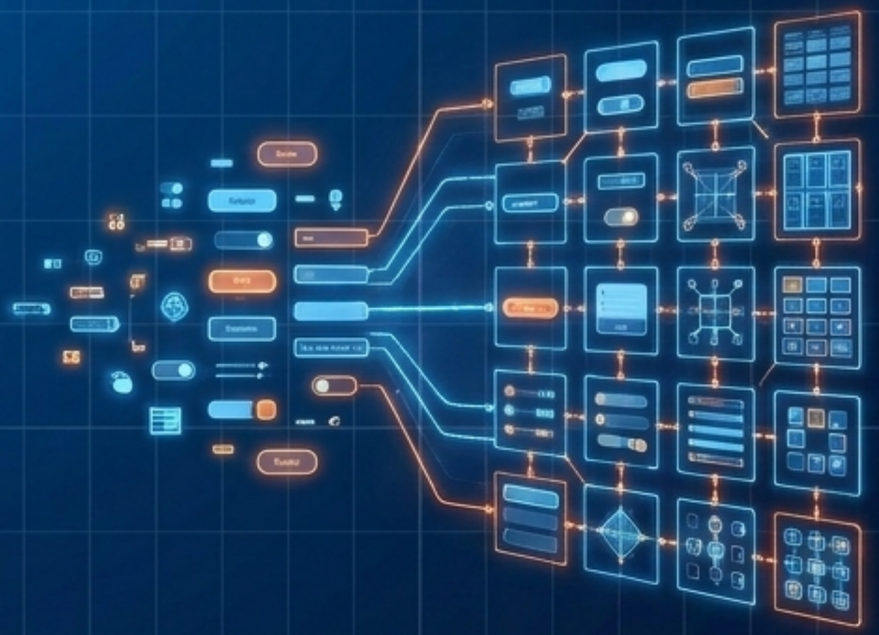
The Goal: Move from theoretical compliance to muscle memory.

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Quantified Reference Sheet & Next Up

The Intrinsic Blueprint Numbers

Reflow:	320 CSS px / 400% Zoom (SC 1.4.10)
Contrast:	4.5:1 Body / 3:1 Large Text (SC 1.4.3)
UI Contrast:	3:1 Inputs & Borders (SC 1.4.11)
Targets: 	24px Minimum (SC 2.5.8) / 44px Recommended (NN/g)
Mobile Inputs:	16px minimum font size to prevent iOS zoom.



Next Up (S09E12): Creating a Consistent Visual System

How to take these resilient, accessible components and scale them across a massive enterprise design language.

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