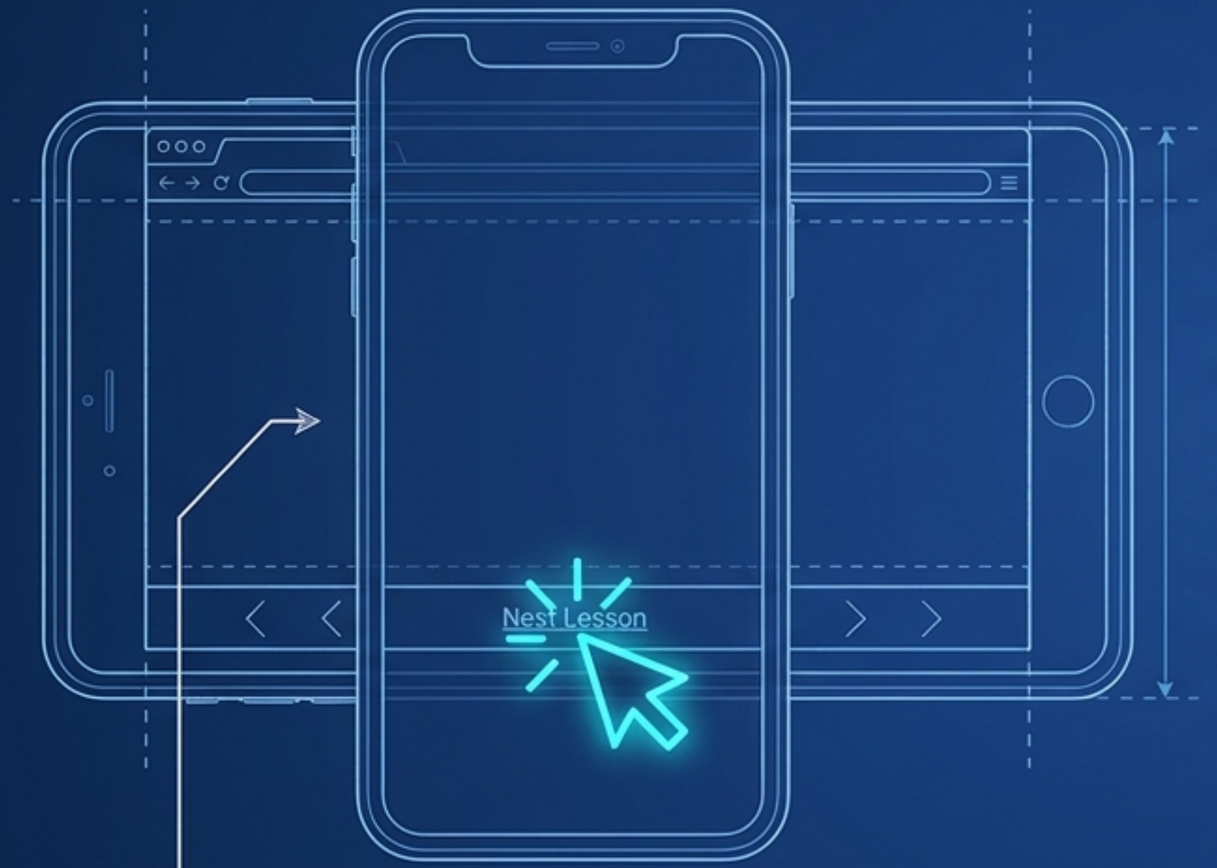
Digital Accessibility S10E05 — Dynamic Interfaces & Mobile Apps

RECAP: Moving beyond the static forms, controls, and authentication of S10E04, this module shifts our architectural focus to asynchronous state management, single-page application (SPA) routing, strict modal focus containment, and cross-platform mobile pointer/gesture parity.

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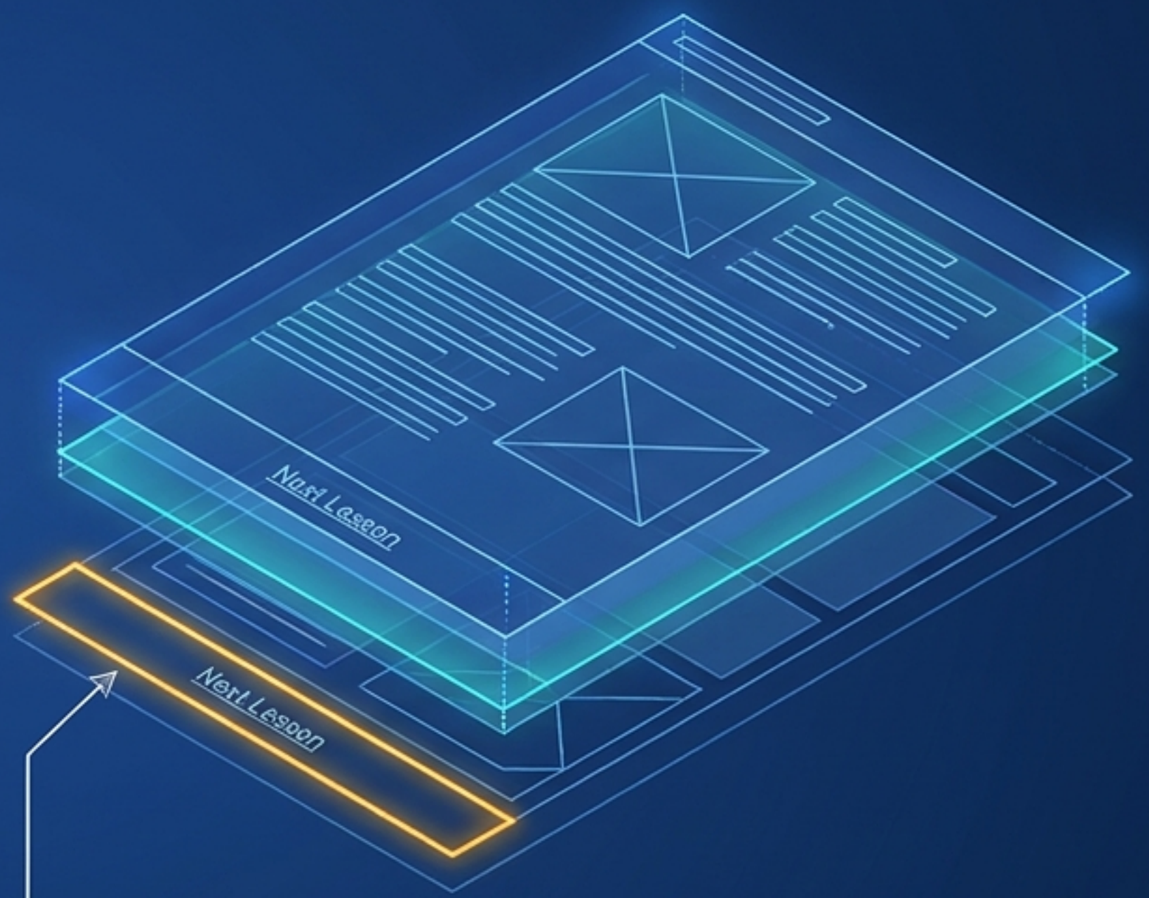
Ch. 1 — SPA Route Transitions & The Footer-Stranded Problem (WCAG 2.4.2)

PHYSICAL DEVICE ACTION



Visual Viewport: Screen updates visually without a page reload.

HIDDEN DOM STRUCTURE (ISOMETRIC X-RAY OVERLAY)



Accessibility Tree / Focus: Keyboard & Screen Reader users are trapped in the previous component's location. Next Tab press drops them into browser chrome.

Gemini Notebook

Ch. 1 — The Fable Fix: Recreating the Native Refresh

Fable Tech Labs empirical finding: Programmatically recreate the native browser refresh experience to prevent disorientation.



Proceed to **Lab S10E09** for React-specific router hooks and implementation.

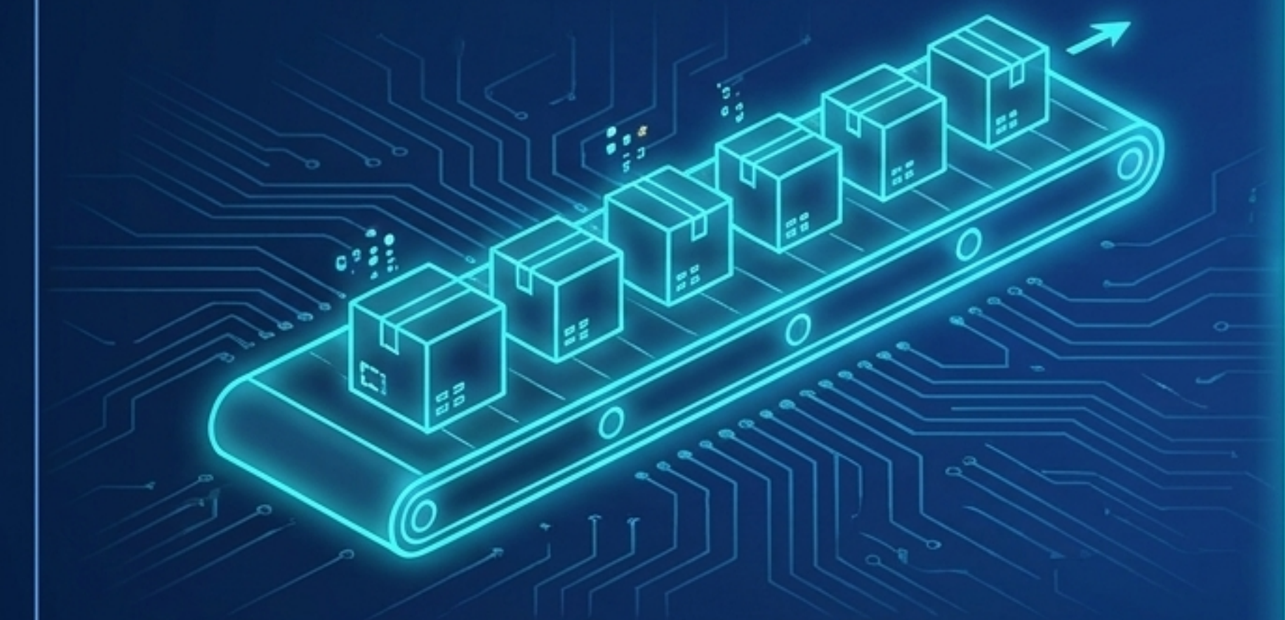
Gemini Notebook

Ch. 2 — Asynchronous Status Messages & Live Regions (WCAG 4.1.3)

STATUS MESSAGES

Role: `role='status'`

Attributes: `aria-live='polite', aria-atomic='true'`



Use Cases: Save confirmations, filter counts

Example: "Showing 4 of 128 enrollments"

Behavior: Waits for the user to pause before speaking.

ALERT MESSAGES

Role: `role='alert'`

Attributes: `aria-live='assertive'`

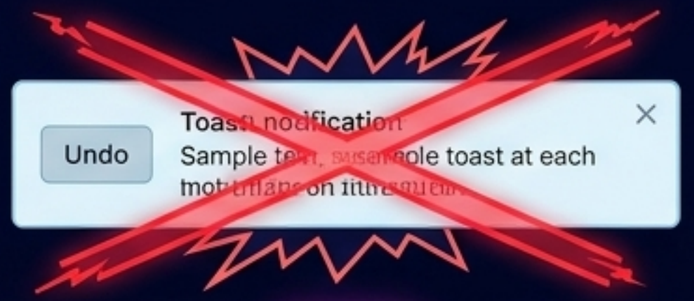


Use Cases: Server connection lost, critical form validation failure.

Behavior: Instantly interrupts and clears the screen reader's current speech queue.

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Ch. 2 — The Anti-Toast Discipline



0.0s



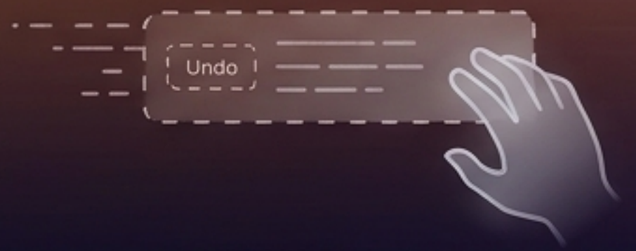
Toast appears off-screen
(Magnifier users cannot see it).

1.5s



Screen reader queue is interrupted;
user begins motor-function
attempt to reach the Undo button.

3.0s



Toast vanishes into thin air.
User fails focus acquisition.

>_

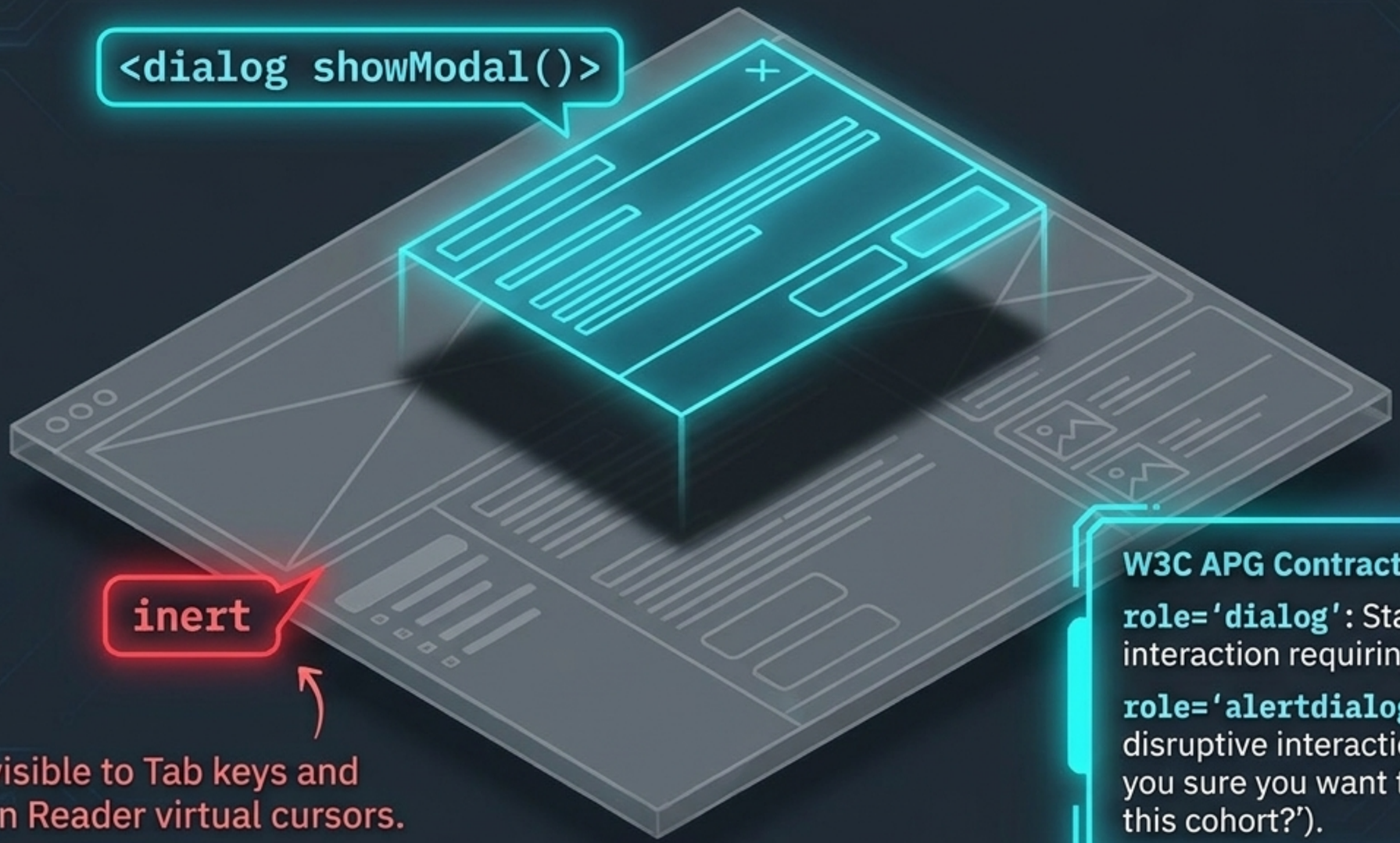
Live containers must exist in the DOM before text injection to reliably trigger assistive tech.



See **Lab S10E09** for
React announcer queues.

Gemini Notebook

Ch. 3 — Modal Dialogs: Native <dialog> & The Top Layer



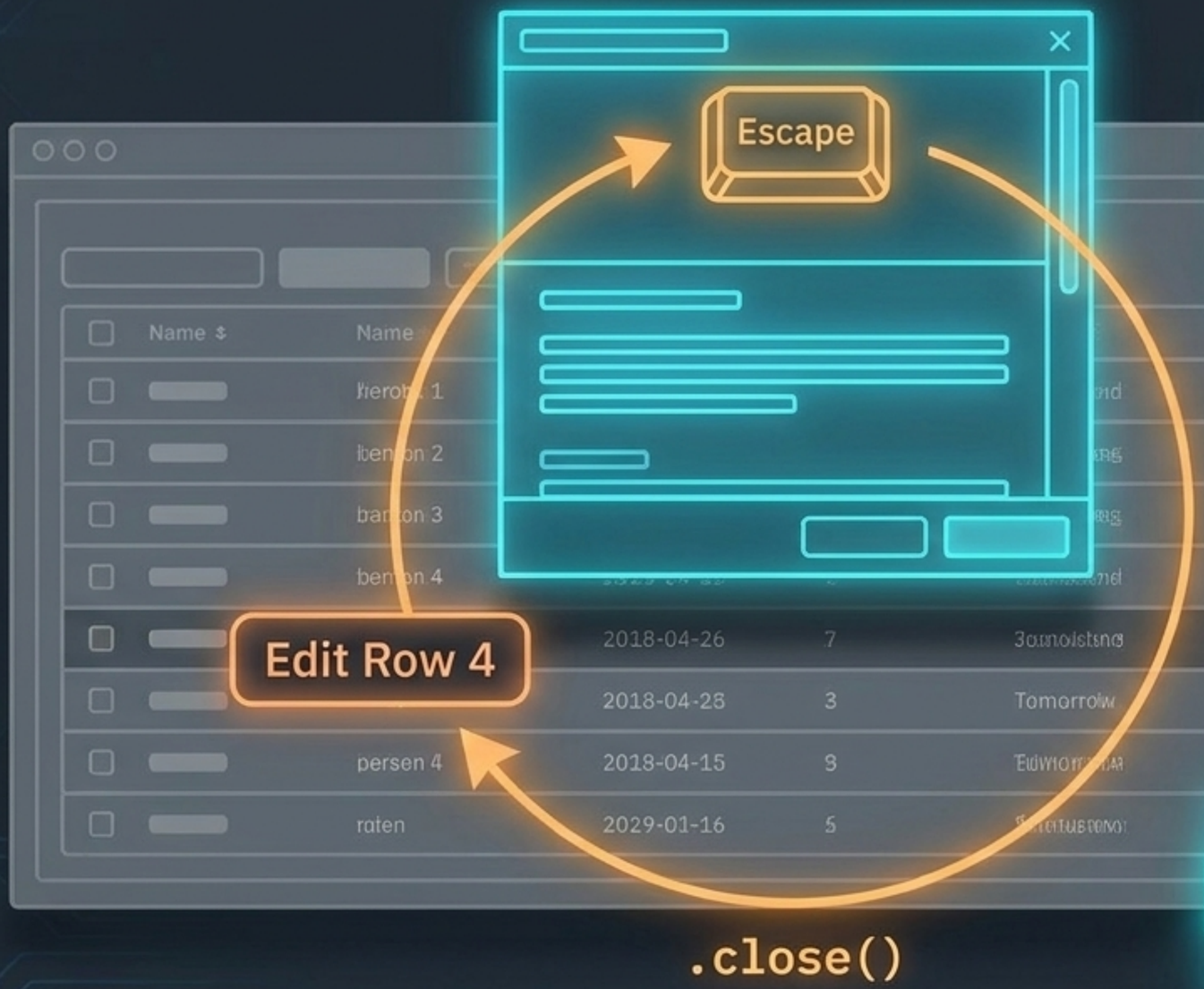
W3C APG Contracts

role='dialog': Standard interaction requiring user input.

role='alertdialog': Urgent, disruptive interaction (e.g., 'Are you sure you want to delete this cohort?').

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Ch. 3 — Containment, CSS Scroll Safety, & Focus Restoration



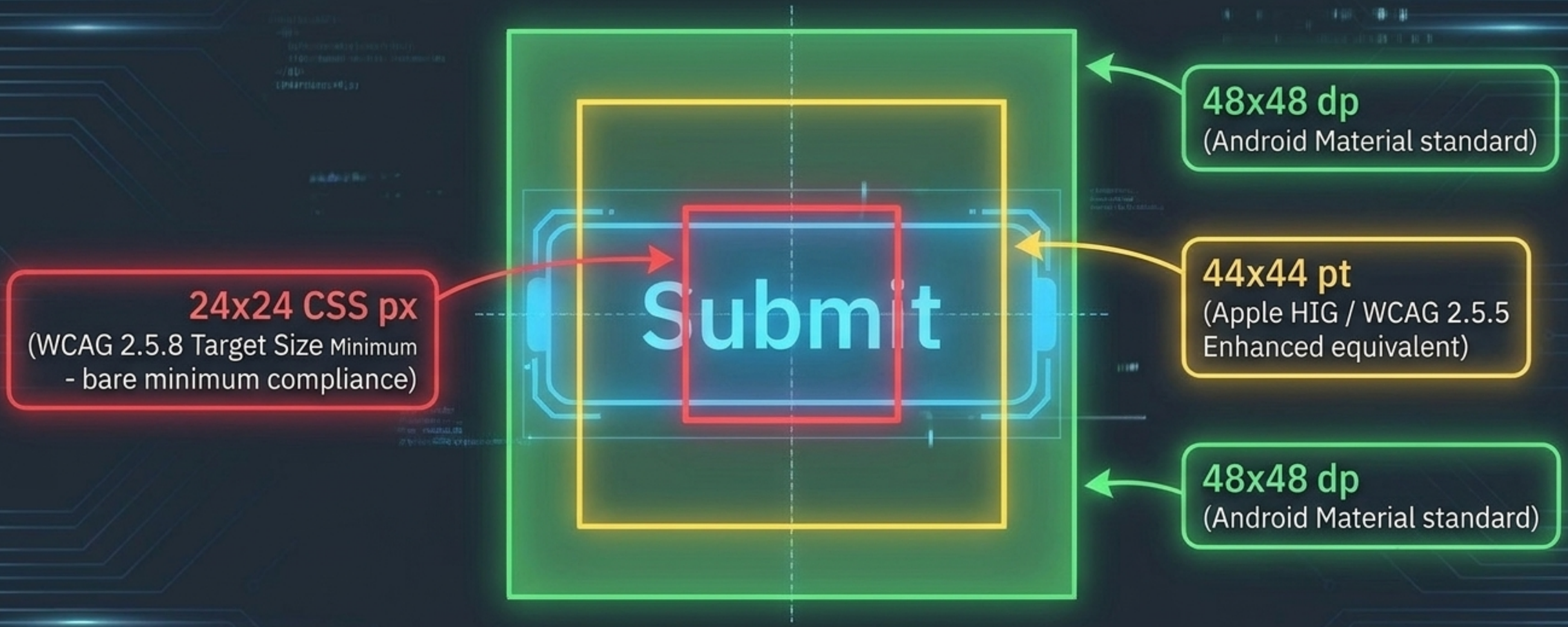

```
{
  max-height: 90dvh
}
```

Safe inner scrolling preventing dual-scrollbar layout breakage.

For roving **tabindex** composite widgets (grids/tabs), proceed to **Lab S10E10**.

Gemini Notebook

Ch. 4 — Shared Mobile Principles: Target Sizing (WCAG 2.5.8 vs 2.5.5)



Design for the **44pt/48dp** standard. Anything smaller requires defensive **CSS padding** to prevent touch-target intersection.

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Ch. 4 — Shared Mobile Principles: Gestures & Pointer Cancellation



WCAG 2.5.1 Path Swipes





WCAG 2.5.7 Drag-and-Drop





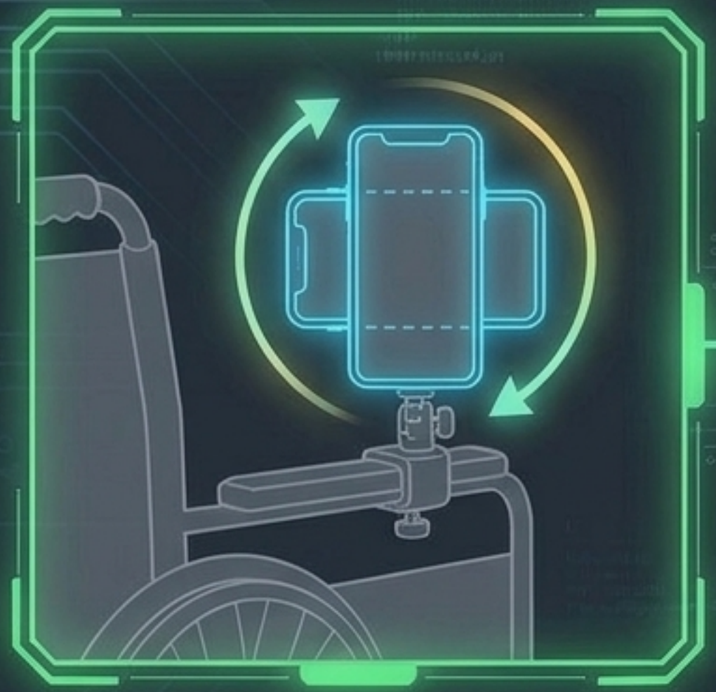
Trigger on Press



WCAG 2.5.2 Pointer-Up Cancellation

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Ch. 4 — Shared Mobile Principles: Orientation, Motion, & Dynamic Type



WCAG 1.3.4:
Orientation freedom



WCAG 2.5.4: Motion-actuation toggles (disable Shake to Undo, provide fallback button)

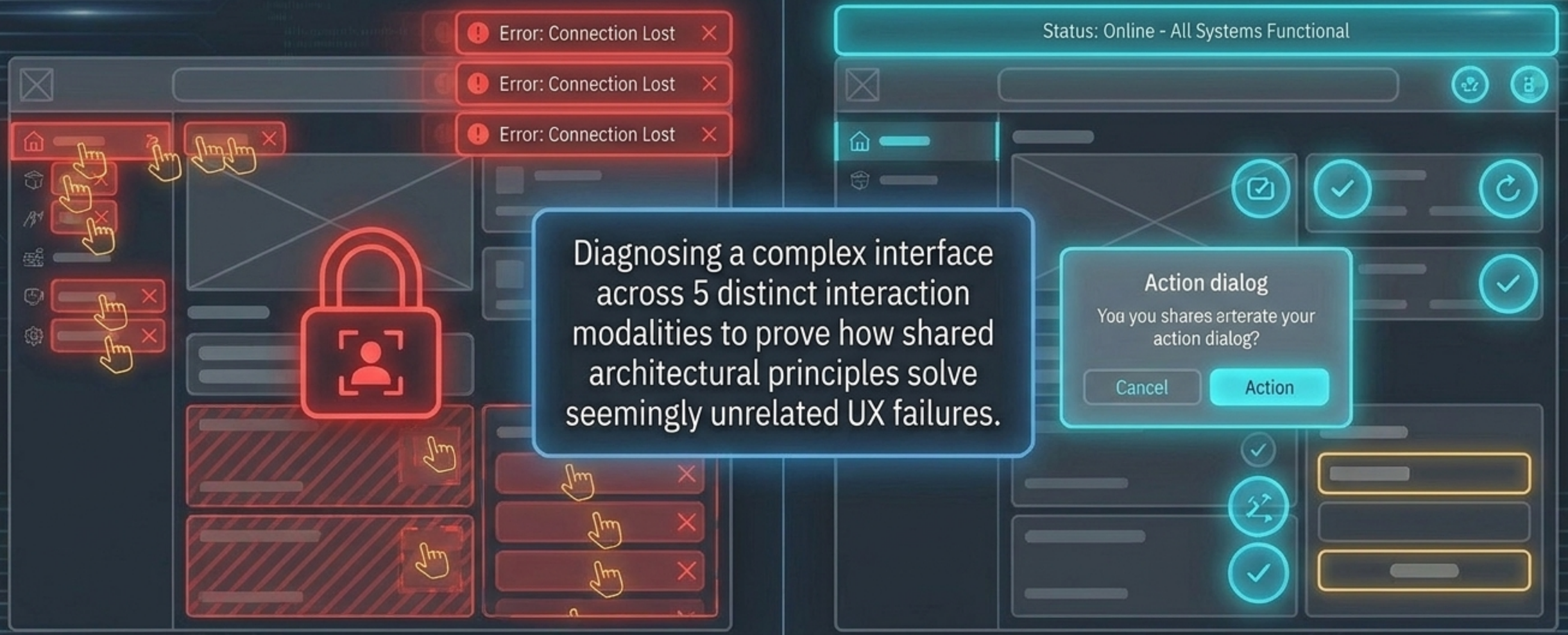


Scaling: iOS Dynamic Type (AX1–AX5) and Android nonlinear sp reflow

For native SwiftUI & Jetpack Compose implementations, proceed to Lab S10E12.

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Ch. 5 — Broken → Fixed Matrix (Context: Pathway & Ops Desk)



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Ch. 5 — Broken → Fixed Matrix (Visual & Keyboard)

Modality	Broken	Fixed
Visual / Cognitive 	⚠ • 3-second vanishing toast; ⚠ • clickable background behind active modal; ⚠ • layout locked to portrait.	✓ • Persistent inline status message; ✓ • showModal() backdrop blocks background clicks; ✓ • free hardware rotation.
Keyboard 	⚠ • SPA focus left stranded in footer; ⚠ • Tab key leaks out of modal; ⚠ • focus lost to document body on close.	✓ • Programmatic focus to <h1> on route change; ✓ • inert containment + Escape key support; ✓ • focus restored exactly to ‘Edit Row 4’.

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Ch. 5 — Broken → Fixed Matrix (Screen Reader, Zoom, Switch)

Modality	Broken	Fixed
Screen Reader 	⚠ • ‘Link, Lesson 3’ (missing route context) + silence on toast + ⚠ • leaky modal shadow DOM.	✓ • ‘Lesson 3… heading level 1’, ✓ • ‘Progress saved…’ (live region), ✓ • ‘Reassign Cohort…, combo box’.
400% Zoom (320px Viewport) 	⚠ • Corner toast renders entirely off-viewport; fixed 256px-tall modal footer clips off-screen.	✓ • Inline status remains in reading order; <dialog> uses scrollable 90dvh layout.
Mobile / Voice / Switch 	⚠ • Operations require swipe-only or drag-only interactions.	✓ • ‘Move Up/Down’ & ‘Actions’ buttons provided at 44pt/48dp sizes + fluid AX5 text scaling.

Gemini Notebook

Ch. 6 — Annotated HTML/JS Diff: The Architecture

index.html

```
<p id='save-status' role='status'
  aria-live='polite'></p>


<dialog id='reassign-dialog'
  aria-labelledby='reassign-title'>
  ...
<</dialog>
```

app.js

```
const triggerBtn =
  document.activeElement;

dialog.showModal();

... dialog.close();

triggerBtn.focus();
```

captures focus before open

opens top layer

restores focus precisely

Gemini Notebook

Ch. 6 — 3-Part Dynamic Repair Exercise (Part 1 & 2)

Repair 1: The SPA Route

Problem

Router updates UI but leaves focus behind.

Solution

Intercept router event -> Apply `document.title` -> trigger `.focus()` to the main content wrapper.

Repair 2: The Vanishing Toast

Problem

`setTimeout` destroys toast node after 3s, failing AT.

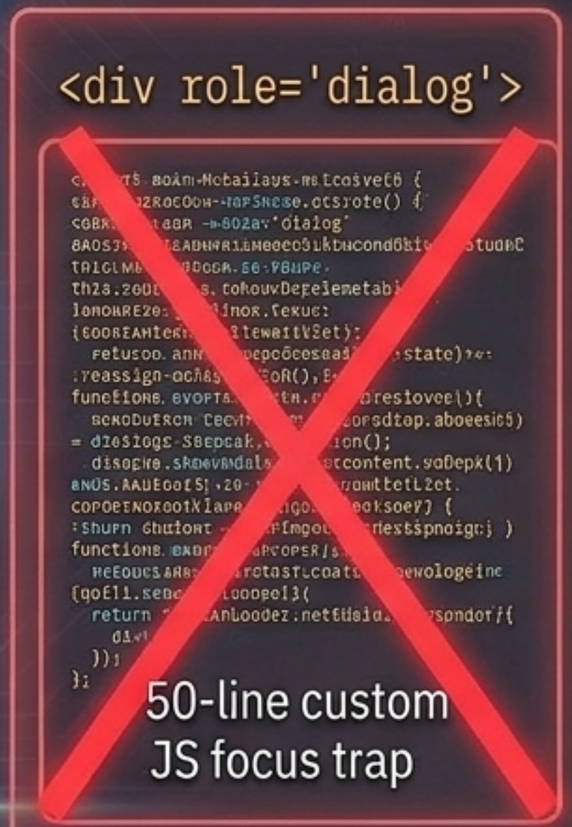
Solution

Refactor to an inline, persistent message utilizing the pre-mounted `aria-live='polite'` region from the previous slide. No auto-destruction.

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Ch. 6 — 3-Part Dynamic Repair Exercise (Part 3)

Before Diagram (The Custom Div Modal)



Drag-and-drop
only reorder list

After Diagram (The Native Fix)

`dialog.showModal()`

Reorder List with Native Buttons

<button> ↑ ↓

<button> ↑ ↓

<button> ↑ ↓

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Ch. 7 — Verification Checklist (The 5-Point Rule)

1. SPA focus & document titles are programmatically routed.
2. Live status containers exist in the DOM before text injection.
3. Modals use native top-layer inert containment and restore focus on close.
4. Touch targets are 44pt+ with single-pointer physical alternatives to gestures.
5. Interfaces natively support 400% zoom, dynamic scaling, and free orientation.

Gemini Notebook

Lab Hand-Offs & Next Up

Lab E10:
Focus Management
& Roving Tabindex

Lab E09: React Router
& Announcer Queues

To goio dynamic protxems eihexnat content
with in modern applications.

Lab E12:
Native iOS (SwiftUI)
& Android (Compose)

S10E06: Accessible Content and Media

Fixing dynamic architectural foundations resolves the vast majority of severe WCAG blockers in modern applications. Build robustly, scale universally.

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