

From Zero to Mobile: Web + Capacitor

- Fresh macOS to a running Android app
- Plain HTML/CSS/JS + tiny router
- Capacitor: Geolocation + Haptics

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Open with the promise: modern mobile from web skills, no frameworks.

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What we'll build

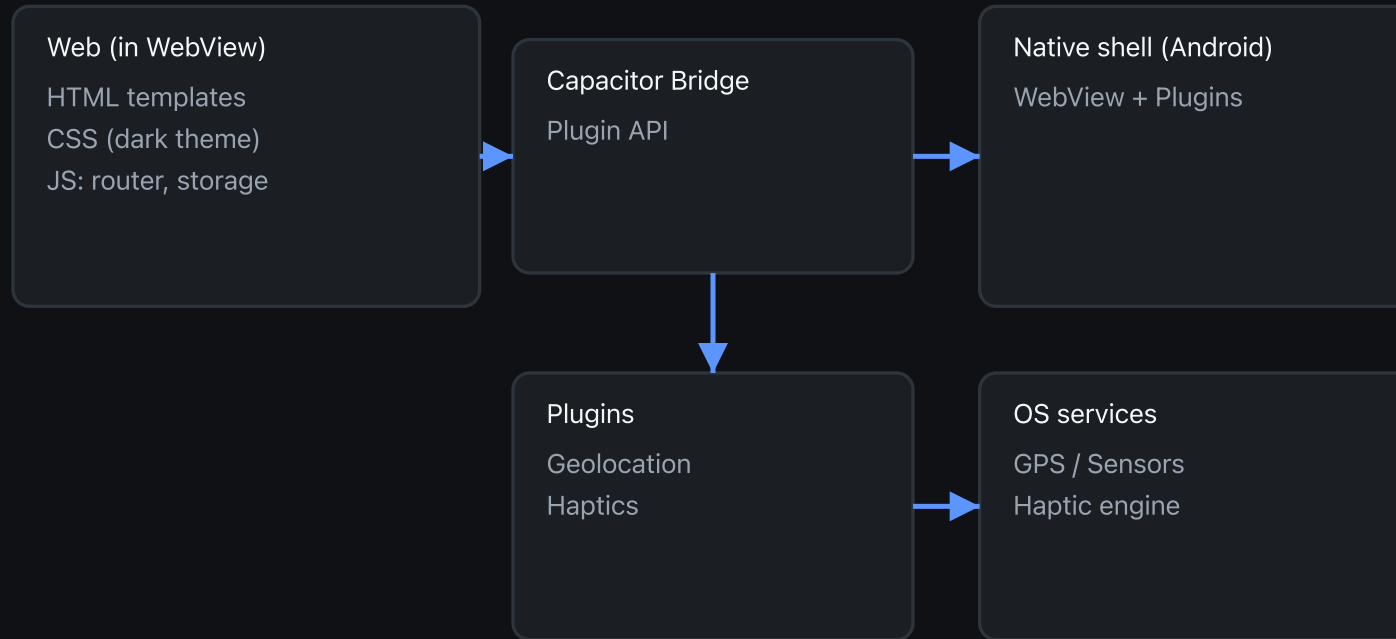
- Dark start screen (templates + CSS)
- Do Action → fullscreen circle zoom
- Get Location → GPS + haptics
- Settings → localStorage persistence

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Focus on separation of concerns: HTML templates, CSS, JS modules.

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Architecture overview



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Web assets loaded in a WebView. Calls go through Capacitor bridge to native plugins.

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Setup (macOS)

1. Xcode Command Line Tools: `xcode-select --install`
2. Homebrew
3. nvm + Node ≥ 20 (we use 22)
4. Java 21 via Homebrew
5. Android Studio + SDKs

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Call out common pitfalls: Node from conda, wrong Java.

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Project structure

```
www/  
  index.html  
  css/styles.css  
  js/  
    storage.js  
    capacitor-bridge.js  
    router.js  
    app.js
```

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HTML in <template> tags, JS clones and binds events.

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Running the app

```
source ~/.nvm/nvm.sh && nvm use 22
npm install
npm install @capacitor/core @capacitor/cli @capacitor/android \
  @capacitor/geolocation @capacitor/haptics
npx cap sync android
npx cap open android
```

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Run on emulator or a real device via Android Studio.

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Code tour: templates + router

- index.html contains `<template id="tpl-start">`, `tpl-about`, `tpl-settings`
- router maps `#hash` → template id
- After render, bind events per screen

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Show how to add a new screen in 2 steps.

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Capacitor bridge

- Geolocation: GPS (with browser fallback)
- Haptics: vibrate on click/success
- Graceful degradation on web

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Highlight progressive enhancement.

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UX details

- Dark theme, high-contrast defaults
- Focus states and button affordances
- Animation: circle zoom with keyframes

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Make it feel polished without frameworks.

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Exercises

1. New route + button
2. Another Capacitor plugin (Clipboard, Device)
3. Theme toggle in localStorage
4. Offline with a service worker

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Encourage experimentation.

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Troubleshooting

- Node (use nvm): `nvm use 22`
- Java (need 21): set Gradle JDK to 21
- SDK licenses: accept in Android Studio
- Gradle clean: `(cd android && ./gradlew clean)`

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Reference the README troubleshooting section.

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Q&A

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Invite questions and next steps.

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