

# The (Abundant) State of the Web

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● dotJS Paris @ Folies Bergère

**The Web has never  
been more capable.**

And never has more  
of that capability been  
sitting **untapped**.

We all **got richer**, but somehow  
**nobody's spending it.**

Capabilities are landing  
at **unprecedented pace.**

— OUTLINE

# Today, I want to tell you the ongoing story of how

- ◆ The page got better
- ◆ The page left the tab
- ◆ The tab became the computer



# Jad Joubran

Educator · Entrepreneur

INTERACTIVE BROWSER-BASED COURSES

[LearnJavaScript.online](#)

[LearnAI.online](#)

[React-Tutorial.app](#) · [SQL-Tutorial.app](#) · [LearnHTMLCSS.online](#) · [LearnTypeScript.online](#)

01

— ACT ONE

**The page got better.**

As a JavaScript developer, it's **good to be excited** when you **don't have to use JavaScript anymore** for certain features.

# Powerful UI primitives

- ◆ Dialog element
- ◆ Popover
- ◆ Anchor positioning
- ◆ Customizable `<select>`

## — CONTAINER QUERIES

# scroll-state()

🔴 Limited availability

Chrome 144

Edge 144

Firefox —

Safari —

index.css

```
.wrapper {  
  container-type: scroll-state;  
}  
  
.wrapper header {  
  /* most recent scroll was toward the bottom edge (scrolling down) */  
  @container scroll-state(scrolled: bottom) {  
    translate: 0 -100%;  
  }  
}
```

— THE "PAGE" STARTS TO GET BLURRY

# View Transitions

✓ Baseline · Newly available

Chrome 111

Edge 111

Firefox 144

Safari 18

index.js

```
document.startViewTransition(() => {  
  //  
});
```

— ALSO ACROSS PAGES (SAME DOMAIN)

# Cross-Document View Transitions

— Limited availability

Chrome 126

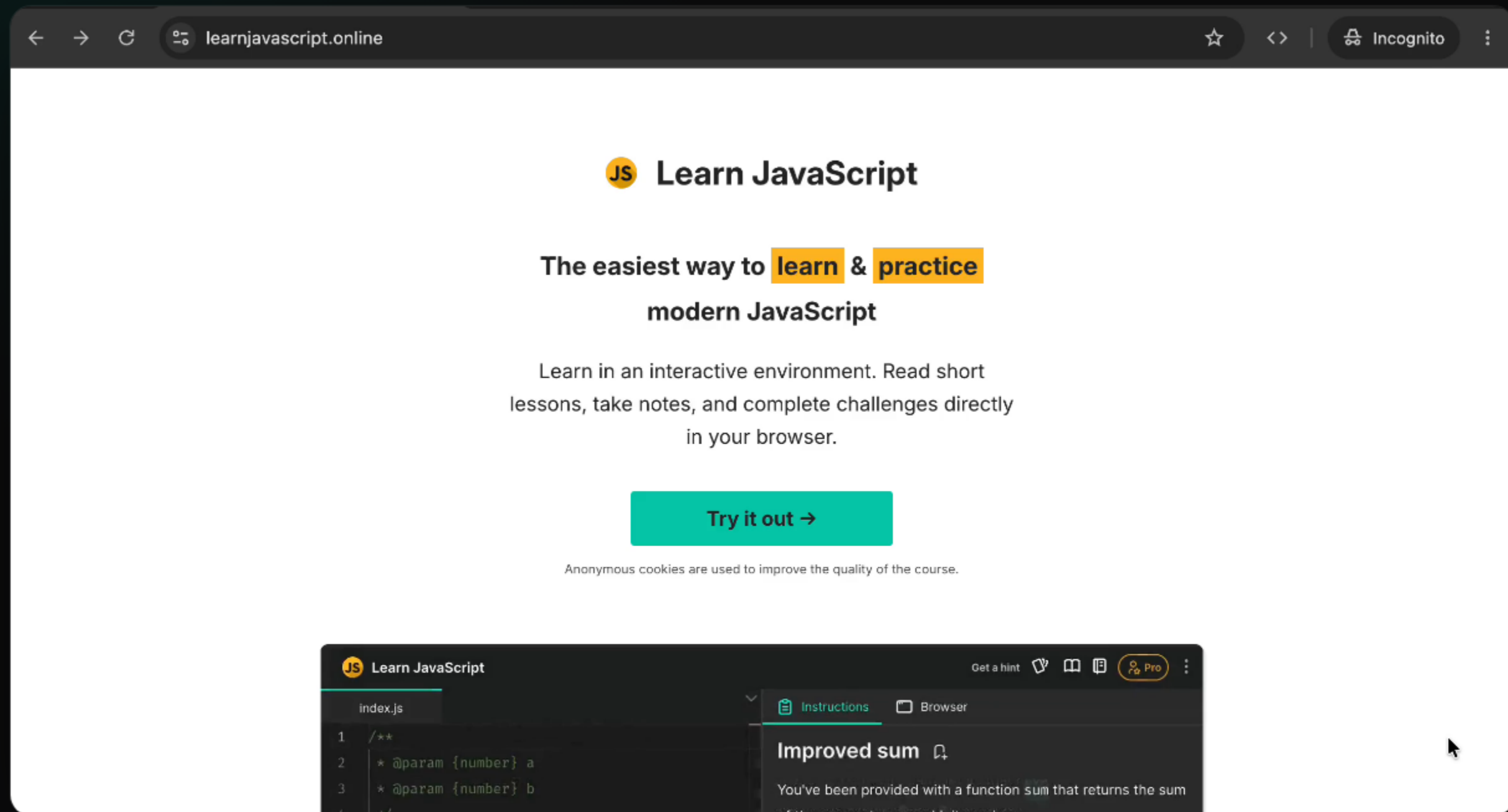
Edge 126

Firefox —

Safari 18.2

index.html

```
<div style="view-transition-name: logo-container;">
```



That's the **page getting better.**  
But some of this **doesn't**  
**want to stay on the page.**

02

— ACT TWO

**The page  
left the tab.**

— OPEN A FLOATING, ALWAYS-ON-TOP WINDOW THAT CAN DISPLAY ARBITRARY HTML

# Document Picture-in-Picture

⊖ Limited availability

Chrome 116

Edge 116

Firefox 151

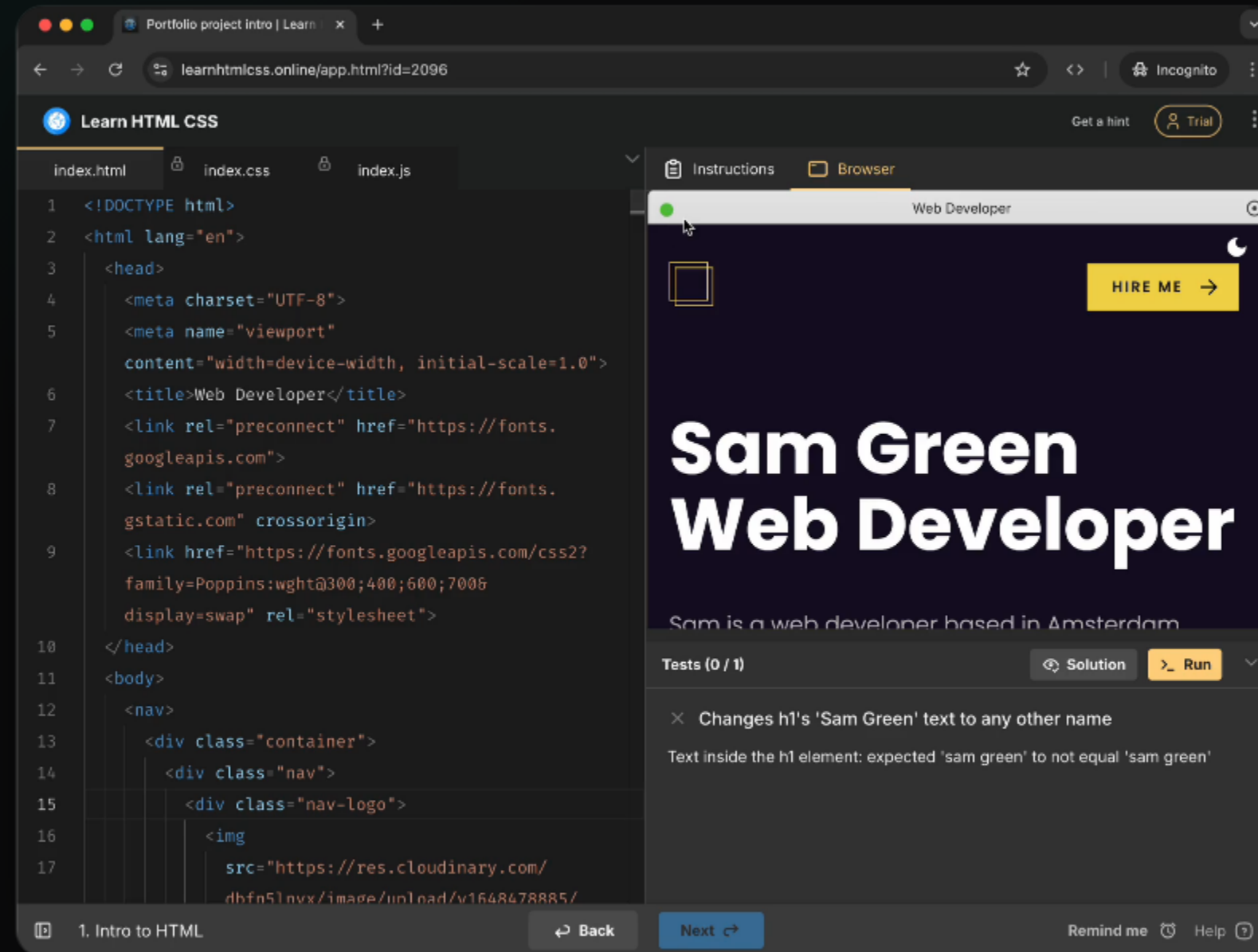
Safari —

index.js

```
const pipWindow = await documentPictureInPicture.requestWindow();
```

```
pipWindow.document.documentElement.innerHTML = `...`;
```

## — USE CASE



[developer.chrome.com/blog/document-pip-use-case](https://developer.chrome.com/blog/document-pip-use-case)

**Web Apps**  
**work everywhere.**

— WEB APPS CAN RECEIVE PUSH NOTIFICATIONS

# Web Push

✓ Baseline · Widely available

Chrome 50

Edge 17

Firefox 44

Safari 16.4

On iOS, they exclusively work in (installed) **Web Apps**.



**The web has its weaknesses,  
but it remains undefeated  
with the power of its link.**

- ◆ Ability to share an instant experience
- ◆ Link juice/equity (used by AI for grounding)

Which brings us to the  
**best part:** what that  
**page can actually run.**

03

— ACT THREE

**The tab became  
the computer.**

— WE ARE AT AN INFLECTION POINT

We went  
from **scarcity**  
to **abundance**.



ChromeFileEditViewHistoryBookmarksProfilesTabWindowHelp

OTA | XREAL

xreal.com/ota/

English

www.xreal.com wants to connect to a HID device

XREAL One Pro

CancelConnect

e Update

Please connect your XREAL device to your computer.  
Click 'Connect', select the XREAL device you wish to upgrade in the browser pop-up, and then click 'Connect.'

Connecting...

Update

If you encounter any error messages during the upgrade, Please try refreshing the page and reconnecting the device before attempting again. If the error persists, please take a screenshot of this page and contact our customer service department for assistance. [support@xreal.com](mailto:support@xreal.com)

27

Chrome

File

Edit

View

History

Bookmarks

Profiles

Tab

Window

Help

20°C

English

Wed 2 Sep 18:21

OTA | XREAL

xreal.com/ota/

English

# XREAL Device Firmware Update





Welcome, Dear XREAL One Pro user.

✓ Connected

Updating (Firmware updating)... 26%

☐ Uploading logs during the upgrade, could help us make things better! Check [Privacy Policy](#) for details

## Release Note

Latest Version: 8/21/2026  
Firmware Version:  
15.1.03.522\_20260820\_15.A.01.097\_20250430\_1.9.1.20260820191100

### Experimental Feature: Gesture Control

- Added the [ Gesture Control ] feature. With the XREAL Eye camera, you can control the virtual screen with your hands. Scroll through short videos, control playback, or skip ads. No need to reach for your phone, use a controller, or touch the glasses. Double-click the [ X ] button to open the menu, then go to [ Other ] → [ Lab ] → [ Gesture Controls ] to enable it.



XREAL Device Firmware Update

If you encounter any error messages during the upgrade, Please try refreshing the page and reconnecting the device before attempting again. If the error persists, please take a screenshot of this page and contact our customer service department for assistance.

# File System Access API

- ◆ Excalidraw

Draw, save to file, edit, and save (to the same file).

- ◆ VSCode.dev

Visual Studio code running in the browser from a local folder!

— UNLOCK INSTANT LOADING WITH

# Speculation Rules

— Limited availability

Chrome 109

Edge 109

Firefox —

Safari —

index.html

```
<script type="speculationrules">
  {
    "prerender": [{
      "source": "list",
      "urls": ["app.html"]
    }]
  }
</script>
```

— A RECURRENT THEME FOR THIS CONFERENCE

# Building AI apps

- ◆ Running LLM in the browser

Free, local, and private inference

- ◆ Fallback to the cloud

Frontier models and wider device support

# Running LLM in the browser

- ◆ The **Prompt API**

Easiest to get started with. Least browser support.  
Multi-modal and supports structured outputs.  
Shared across origins.

- ◆ **@mediapipe/tasks-genai**

Runs on WebGPU. Can be easily used to run Gemma

- ◆ **@huggingface/transformers**

Browser support, has Wasm CPU support, and more.

AI

AI Upskilling

Cohort course

INSTRUCTIONS

Get a hint

### Summarize the notes

Welcome to your first challenge! You're provided with a prompt that's not working ideally. Your task is to improve it.

Improve the prompt to return to write a clean summary of **three short bullet points**.

If you're stuck, click the *Get a hint* button in the top-right corner.

Checks (0 / 2)

Solution

✕ Output is a short bulleted summary

✕ Summary reflects the meeting notes

YOUR PROMPT

Summarise these meeting notes:

- Sam to look into the Q3 budget numbers
- email the client about the two-week project delay
- Priya drafting the new landing page copy
- move the design review to Tuesday
- book a venue for the team offsite

1. Intro

Back

Next

Help

## INSTRUCTIONS

[Get a hint](#)

## Write your first skill [🔗](#)

The prompt is already written for you, and it's deliberately vague: "what do I need to do about it?" Run it as is and you'll get a wall of prose back.

Now write the skill. In `skills/email-triage.md`, set out what an email triage should always give you: what the sender wants, the deadline, and a draft reply. Then run the same prompt again, without changing a word of it.

Checks (0 / 2)

[👁️ Solution](#)

- ✕ AI used your skill
- ✕ Output comes back in labelled sections

## YOUR PROMPT

Here's an email that just landed. What do I need to do about it?

Hi, quick one. Legal came back on the vendor contract and they want the data retention clause rewritten before we sign. They need our answer by Tuesday the 9th, otherwise the pricing we agreed expires and we start the whole thing over. I can push back on the clause if you'd rather, but that likely costs us a week. Also, did you ever get the parking pass sorted for the new starter?

Priya

MATERIALS [All files](#) / [skills](#)[← Back](#)[📄 email-triage.md](#)

One more thing...

**There's a new capability  
I haven't mentioned.**

**It has the potential to  
bring a paradigm shift**

**Declarative Partial Updates**

## — STEP ONE

# A named marker in the document

index.html

```
<main id="app">  
  <?marker name="content">  
</main>
```

## — STEP TWO

# Fill it in later in the same response

index.html – 500 ms later

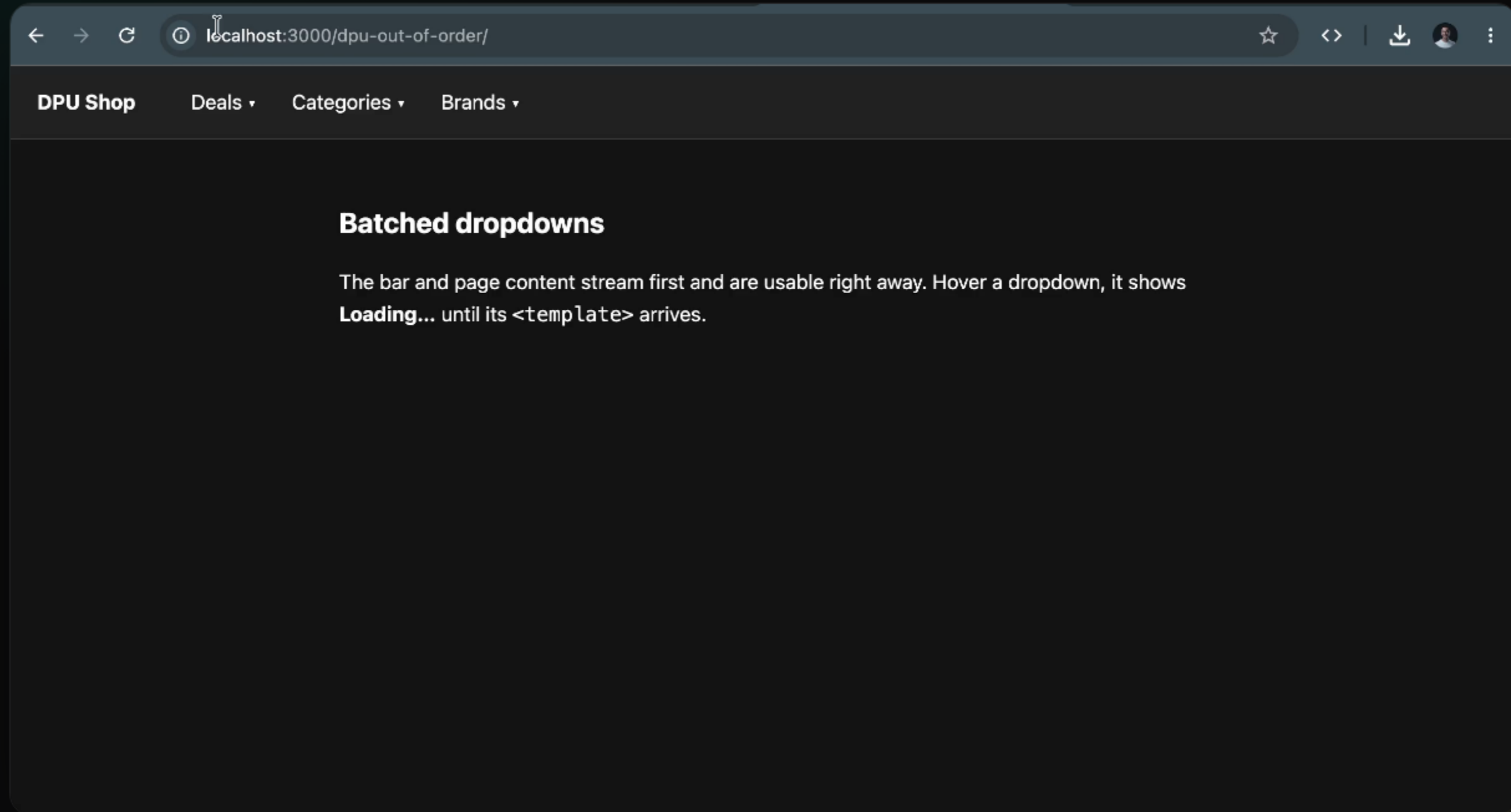
```
<!-- Streamed later within the same response -->  
<template for="content">  
  <p>Content streamed with a delay</p>  
  <script>  
    console.log("✅");  
  </script>  
</template>
```

# A range marker in the document

index.html

```
<main id="app">  
  <?start name="content">  
    <p>Fallback here</p>  
  <?end>  
</main>
```

## — OUT OF ORDER STREAMING



## — SERVER-AWARE PARTIAL RENDERING

localhost:3000/dpu-server-aware-stream/products

DPU App Home **Products** About shell loaded at 09:46:39

### Products

- Aeropress Go Travel Press
- Hand grinder, 40g capacity
- Gooseneck travel kettle

This list was rendered by the server just now.

Delivered as **patch only** (Sec-Fetch-Mode: cors), rendered by the server at **09:46:51**.

2,000 ms 4,000 ms 6,000 ms 8,000 ms 10,000 ms 12,000 ms 14,000 ms

| Name                                | Headers | Preview | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Initiator | Timing |
|-------------------------------------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------|
| dpu-server-a...<br>localhost/dpu... |         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |        |
| products<br>/dpu-server-a...        |         |         | <pre>&lt;template for="page"&gt;   &lt;?start name="page"&gt;     &lt;h1&gt;Products&lt;/h1&gt;     &lt;ul&gt;       &lt;li&gt;Aeropress Go Travel Press&lt;/li&gt;       &lt;li&gt;Hand grinder, 40g capacity&lt;/li&gt;       &lt;li&gt;Gooseneck travel kettle&lt;/li&gt;     &lt;/ul&gt;     &lt;p&gt;This list was rendered by the server just now.&lt;/p&gt;     &lt;p class="proof"&gt;       Delivered as &lt;strong&gt;patch only&lt;/strong&gt;       (&lt;code&gt;Sec-Fetch-Mode: cors&lt;/code&gt;),       rendered by the server at &lt;strong&gt;09:46:51&lt;/strong&gt;.     &lt;/p&gt;   &lt;?end&gt; &lt;/template&gt;</pre> |           |        |

2 requests | 4.3 kB t { }

— WHERE IT STANDS TODAY

# Declarative Partial Updates

⊖ Limited availability

Chrome 150

Edge 150

Firefox Positive

Safari Positive

index.js

```
const response = await fetch("/partials/about");

// stream the response into the page as it arrives
response.body
  .pipeThrough(new TextDecoderStream())
  .pipeTo(main.streamHTMLUnsafe({ runScripts: true }));
```

Oh, by the way.

**You've been watching it  
for **seventeen minutes.****

**These slides are written in  
**Declarative Partial Updates.****

One **GET /**. Never closed. Every slide you've seen arrived as **more bytes** on the **same response**.

— THE NEW SLIDE RE-PLANTS THE MARKER IT CONSUMED.

The same slot can be patched **again**, and **again**.

→ streamed into a response that opened at slide one

```
<template for="deck">
  <section class="slide slide--code">...</section>
  <?marker name="deck">
</template>
```

• LIVE DEMO

# Let's look at the DevTools

And the terminal ;)

**Remember what  
happened to design tools?**

Imagine what might happen  
to **video, audio, AI, etc.**

**Claude Cowork and ChatGPT Work**  
are also being offered on the **Web**.

That's where the majority of users  
**are/begin**.

**Whole classes of software just  
became possible in the browser.**

Let's go build for the **abundant**  
**web** of **today and tomorrow.**

# Merci beaucoup, Paris

## On prend un selfie ?

Slides and DPU demos available at:

[jadjoubran.io/dotjs](https://jadjoubran.io/dotjs)



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INTERACTIVE BROWSER-BASED COURSES

[LearnJavaScript.online](https://jadjoubran.io/learn-javascript)

[LearnAI.online](https://jadjoubran.io/learn-ai)

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