



# DIGITAL WEB SERVICES NETWORK

Bringing together digital product managers, designers, and engineers.

[cdt.ca.gov/dwsn](https://cdt.ca.gov/dwsn)

## DWSN Quarterly Forum

Thursday, January 20, 2022



California  
DEPARTMENT OF TECHNOLOGY  
STRATEGY INNOVATION DELIVERY



# Digital Web Services Network

- Welcome to the DWSN forum, we will begin shortly.
- For the best experience, please use your computer to join the meeting.
- Mute your audio.
- Turn off your video.
- Use the raise hand button or the meeting chat for comments and questions.

# Digital Web Services Network Forum Agenda

<b>Opening Remarks</b>	Blaine Wasylikiw, CDT (5 Minutes)
<b>Cosmos Content Management System</b>	Eric Kauffman, CDT (20 Minutes)
<b>CA Stabilization Service</b>	Ron Robinette, CDT (5 Minutes)
<b>“Big Ideas” live discussion</b>	All (10 Minutes)
<b>Design Systems</b>	
• <b>Introduction &amp; Overview</b>	Artem Khomishen, Adam Little, Chach Sikes (20 minutes)
• <b>Sneak Peek</b>	Adam Little (5 minutes)
• <b>Discussion Panel</b>	Ehb Teng, Chach Sikes, Adam Little, Art Khomishen, Koji (20 minutes)
<b>Suggested Future Topics / Closing Remarks</b>	Blaine Wasylikiw, CDT (5 Minutes)

Please email [DigitalWebServicesNetwork@state.ca.gov](mailto:DigitalWebServicesNetwork@state.ca.gov) for suggested topics or questions.



**DIGITAL  
WEB  
SERVICES  
NETWORK**

# Opening Remarks

**Blaine Wasykiw**

Chief Web Officer

California Department of Technology



# DIGITAL WEB SERVICES NETWORK

## Cosmos Content Management System

Eric Kauffman

Principle Application Engineer (Ret.)  
California Department of Technology

# COSMOS CMS

REIMAGINED CONTENT MANAGEMENT SYSTEM

WITH A HYBRID DESIGN



# ORIGIN

## THE “RESPONSE” WEBSITE

- 2019 Power Safety Power Shutoffs
  - CDT built a high-performance website for the response
  - Top Objectives:
    - Handle more simultaneous users than we’ve ever done
    - Highly available
    - Fast over low bandwidth
    - Designed for mobile devices



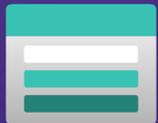
# In the beginning, there were websites...



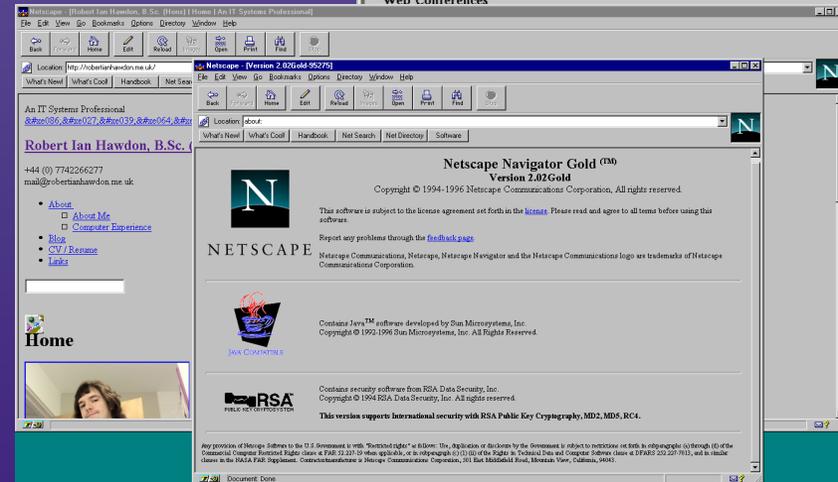
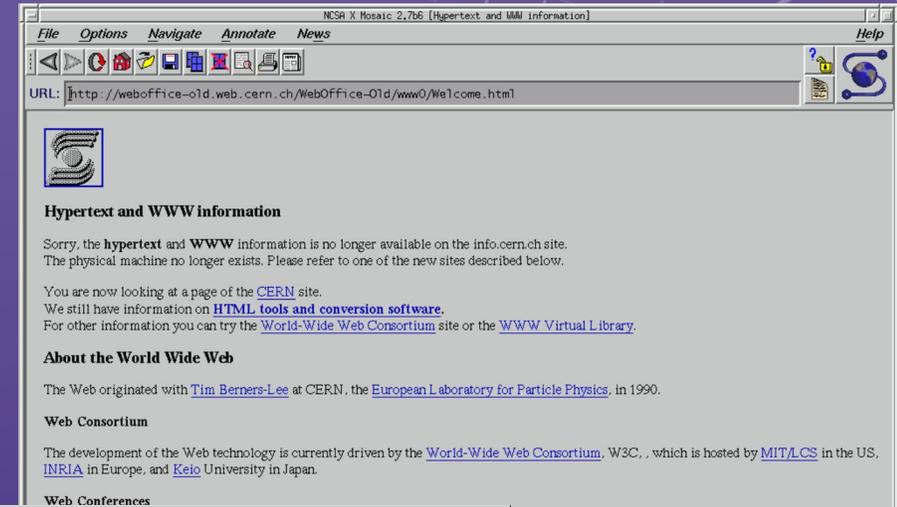
Website user on the Internet



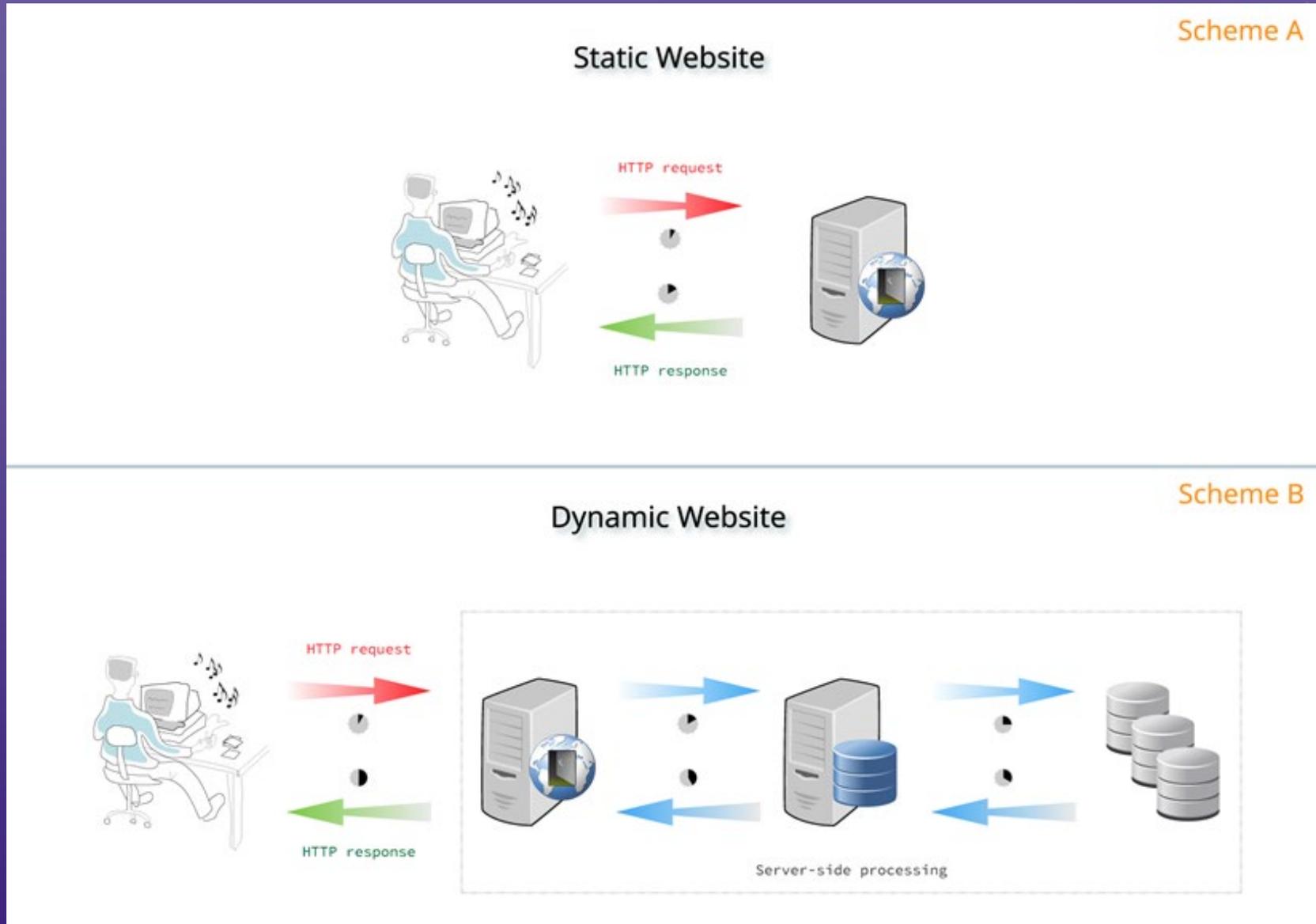
Web server



File storage



# Then came dynamic websites...



$$v = \sqrt{\frac{2\omega}{\sigma\mu}} = \sqrt{\frac{4\pi}{\sigma_c\mu_0}} \sqrt{\frac{f}{\sigma_r\mu_r}} \approx (0.41 \text{ m/s}) \sqrt{\frac{f/(1 \text{ Hz})}{\sigma_r\mu_r}}$$

## LAWS OF PHYSICS NEVER CHANGE

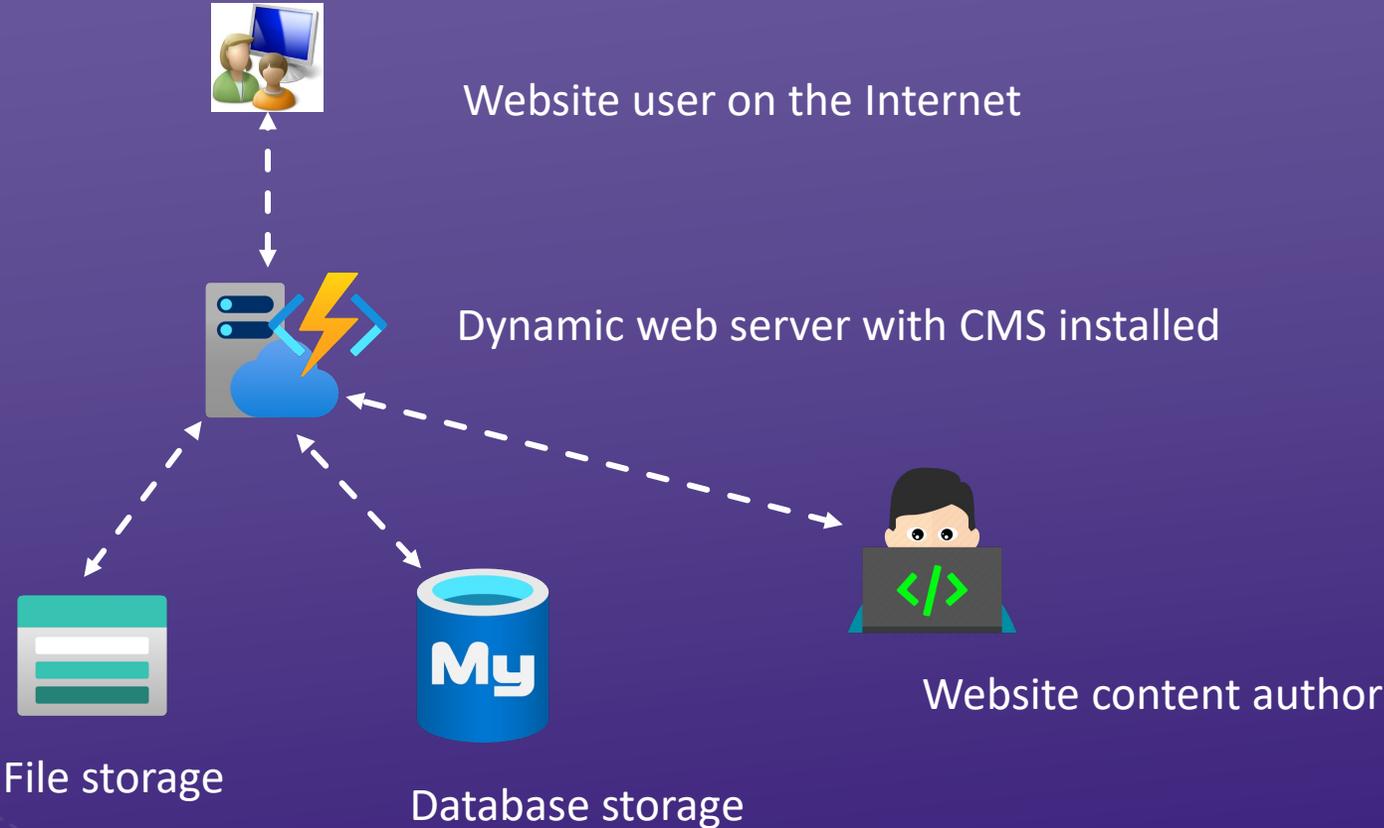
- Speed of electrons is slower than light
- Computer tasks rely on the movement of electrons
- More tasks, more electrons moved, the longer it takes to finish
- This has always been true
- Consequently, dynamic websites can be slower than static ones

# FAST FORWARD – CONTENT MANAGEMENT SYSTEMS

- Very convenient
- Creating web content is relatively easy
- Accessible for the non-technical



# Common CMS Architecture (Simplified)

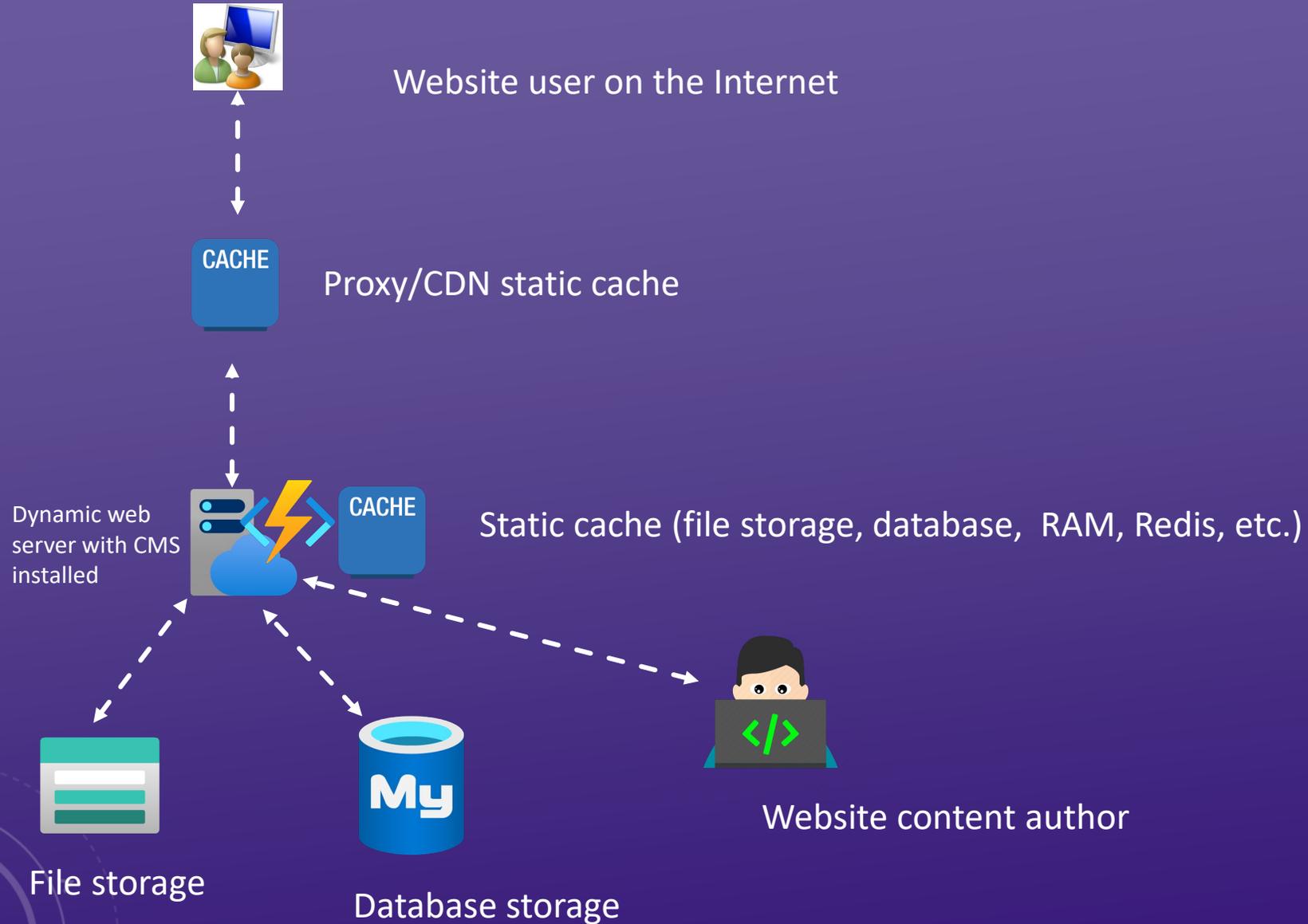


# SPEEDING UP A CMS

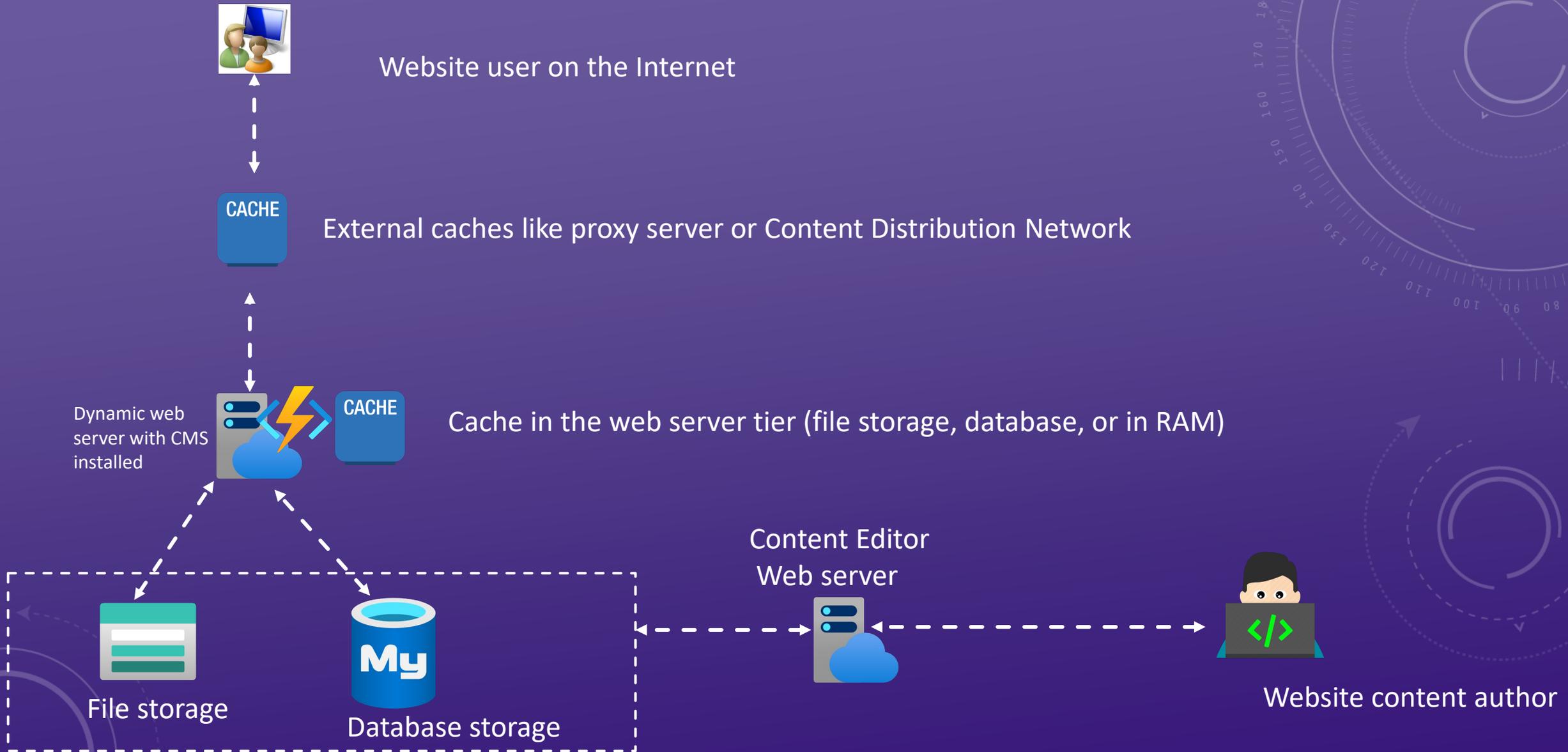
- Two common approaches:
  - Modify the CMS to work differently (plug-ins, modules, custom code, etc.).
    - HTML pages normally “built on the fly” are pre-generated and saved as static files.
  - Add external services that sit in between the CMS and user
    - Proxy server and/or Content Delivery Networks (CDN).
    - Dynamic content is cached as “static” in these external services.
    - Essentially a static website/service replaces CMS for serving content.

The Result: CMS now behaves like a static website.

# Modified CMS (for performance)



# Modified CMS With Editor Tier



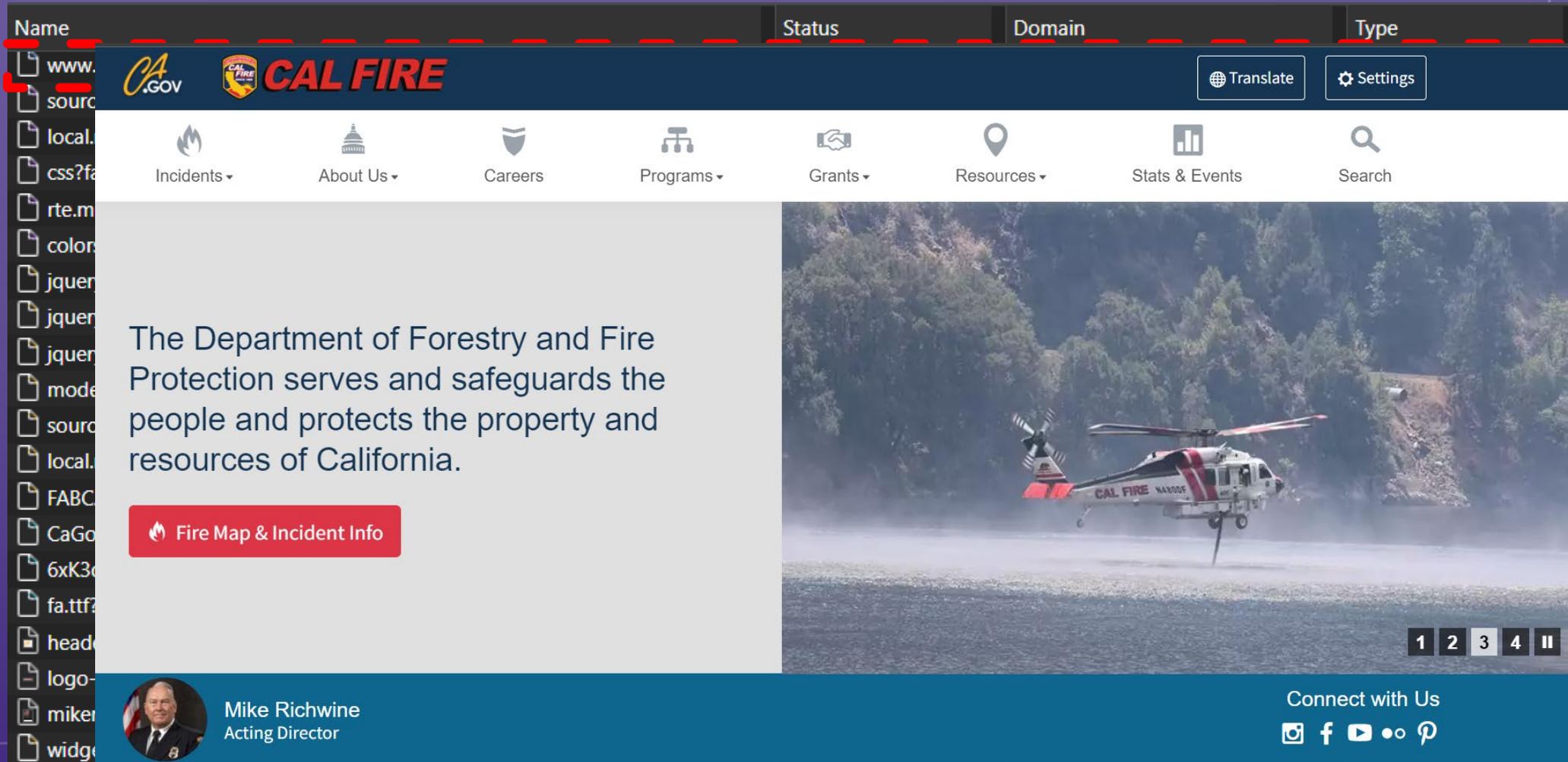
# THE “RESPONSE” WEBSITE CHALLENGE

Remove the need for developers to post content and make it possible for an everyday person to so.

- Must perform as well as a static website “out of the box.”
- Web content creation must be easy (that’s another presentation)

“Out of the box” means no extra modifications needed after install such as plug-ins, modules, custom code.

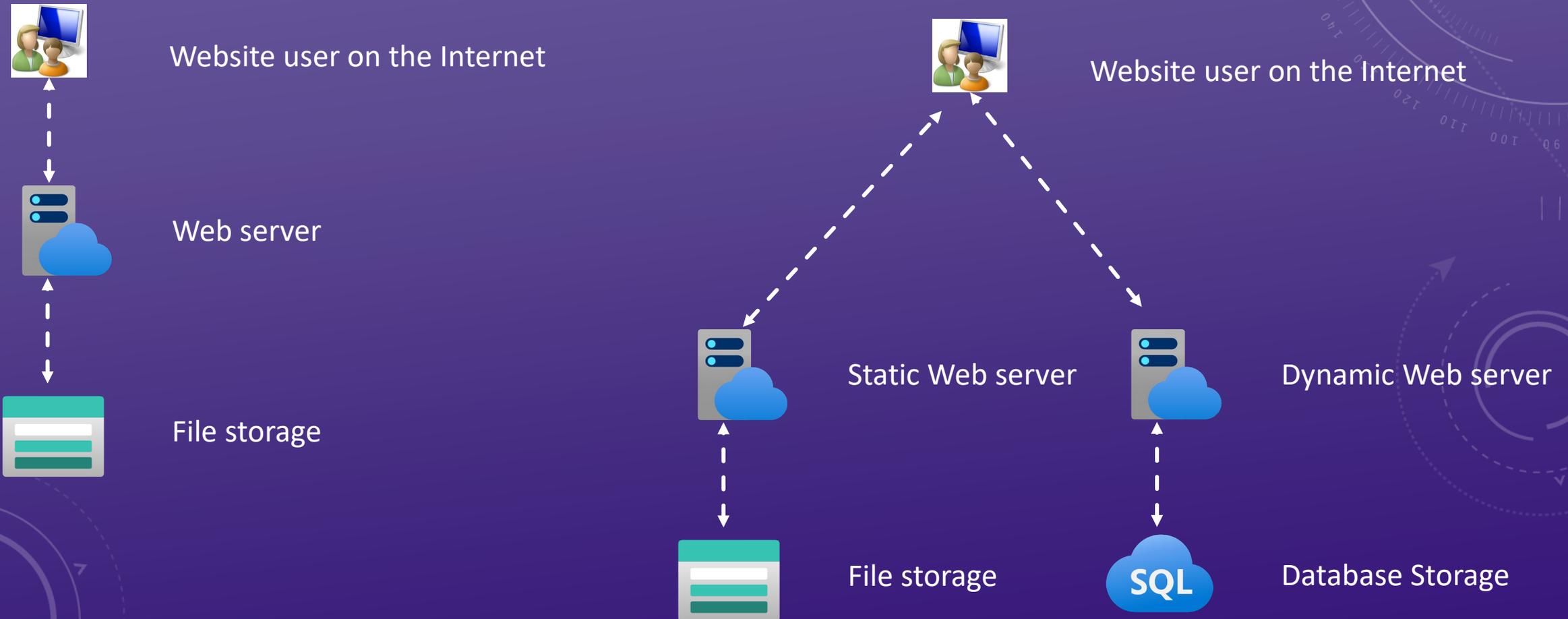
# What is truly dynamic, and what is not?

Name	Status	Domain	Type
			
mariposa_r4p5062_wide_color.jpg?center=0.257575757...450&rnd=13224690...	200	www.fire.ca.gov	webp
waterpickup5k.jpg?anchor=center&mode=crop&width=14...450&rnd=13275...	200	www.fire.ca.gov	webp
firetruck.jpg?center=0.46673793178256423,0.4518910...450&rnd=132751389...	200	www.fire.ca.gov	webp

“Sooner or later, everything old is new again.”

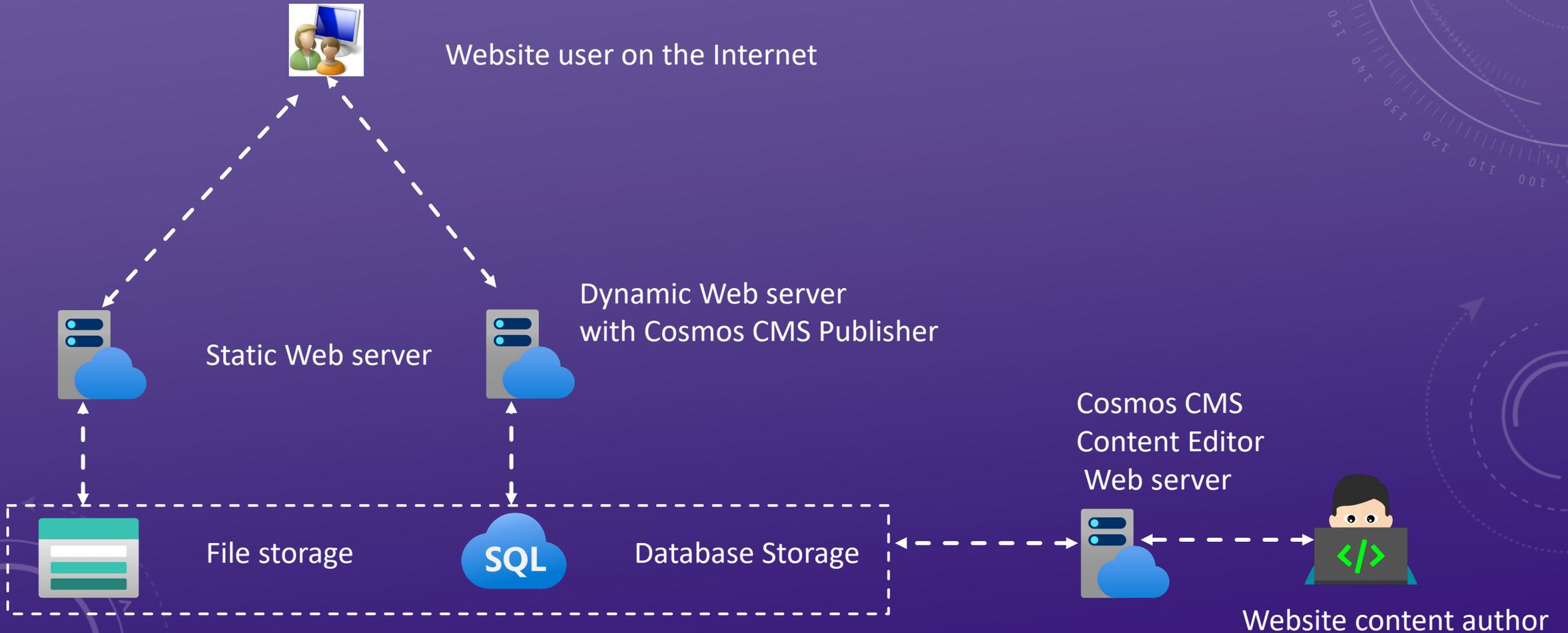
- Steven King, *the Colorado Kid*

Hybrid Design



# Cosmos CMS With Editor Tier

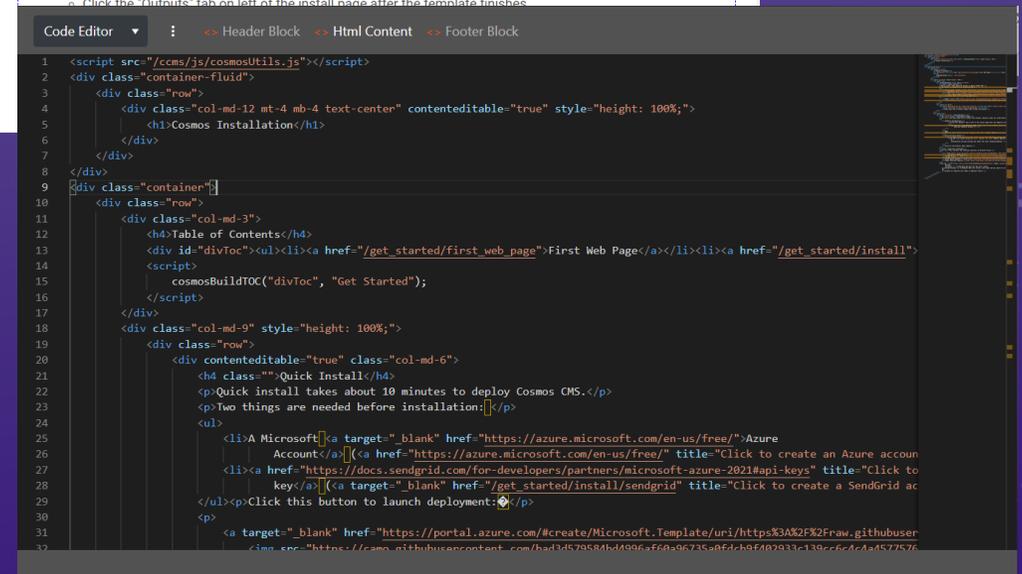
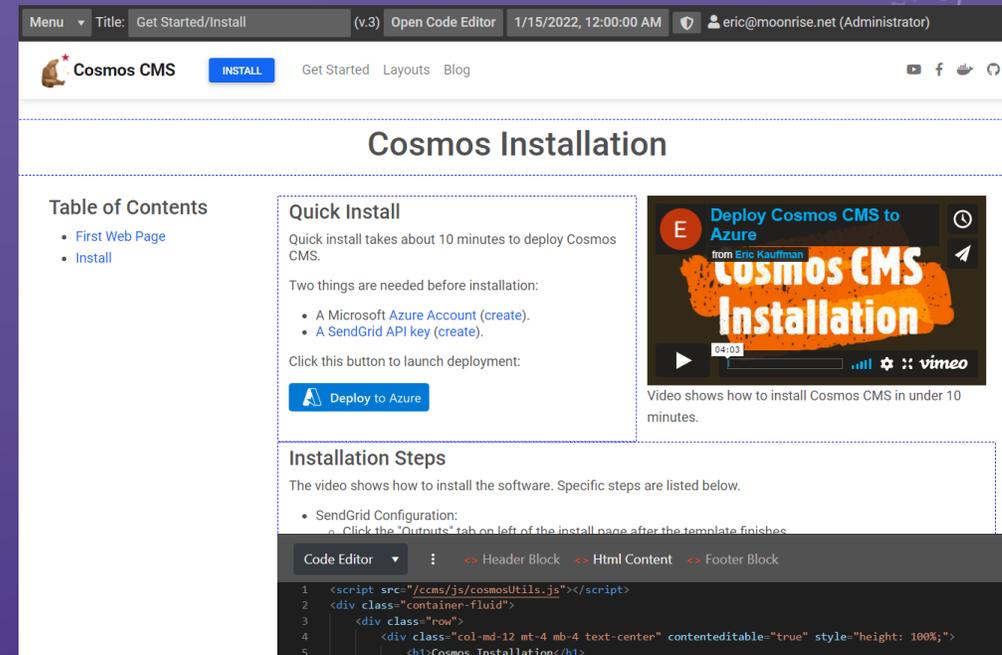
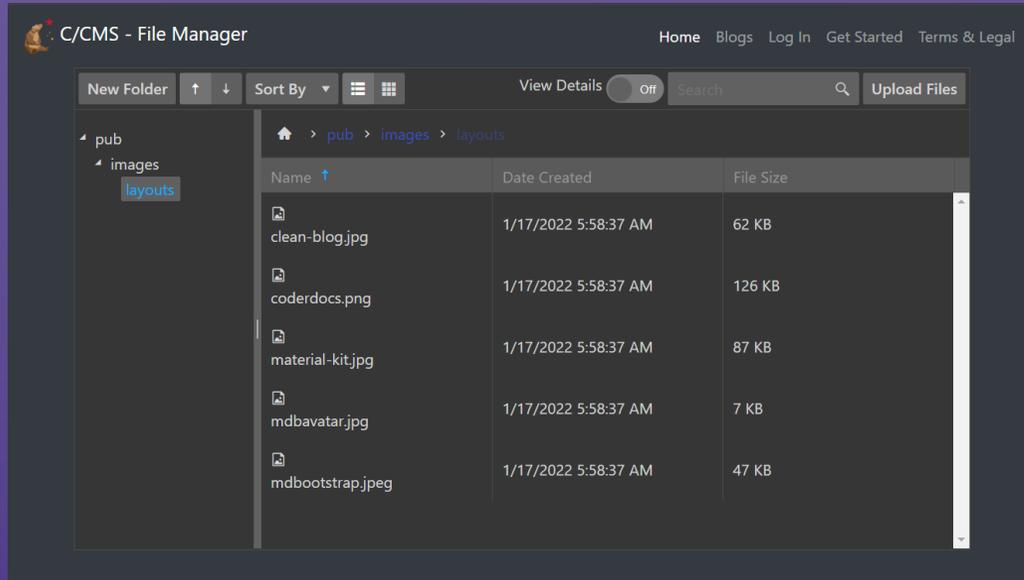
## Hybrid Design



# HOW IS PERFORMANCE?

- Static website performance same as before.
- Dynamic website
  - jMeter test with 50,000 concurrent threads
    - Dynamic site was 2 ½ times faster than serving HTML web pages from static web server
  - jMeter test with 100,000 concurrent threads
    - Dynamic site was 2 times faster

# HOW CONTENT IS MANAGED IN COSMOS



# STATIC CONTENT

The screenshot displays the C/CMS File Manager interface. At the top left, there is a logo of a dog and the text "C/CMS - File Manager". On the top right, there are navigation links: "Home", "Blogs", "Log In", "Get Started", and "Terms & Legal". Below the header, there is a toolbar with buttons for "New Folder", "Up", "Down", "Sort By", "View Details" (set to "Off"), a "Search" input field, and an "Upload Files" button. The main area shows a breadcrumb path: "pub > images > layouts". A sidebar on the left shows a tree view with "pub" and "images" folders, and "layouts" is selected under "images". The main content area displays a table of files:

Name ↑	Date Created	File Size
 clean-blog.jpg	1/17/2022 5:58:37 AM	62 KB
 coderdocs.png	1/17/2022 5:58:37 AM	126 KB
 material-kit.jpg	1/17/2022 5:58:37 AM	87 KB
 mdbavatar.jpg	1/17/2022 5:58:37 AM	7 KB
 mdbbootstrap.jpeg	1/17/2022 5:58:37 AM	47 KB

# HTML WYSIWIG

Menu Title: Get Started/Install (v.3) Open Code Editor 1/15/2022, 12:00:00 AM eric@moonrise.net (Administrator)

Cosmos CMS INSTALL Get Started Layouts Blog

## Cosmos Installation

### Table of Contents

- [First Web Page](#)
- [Install](#)

### Quick Install

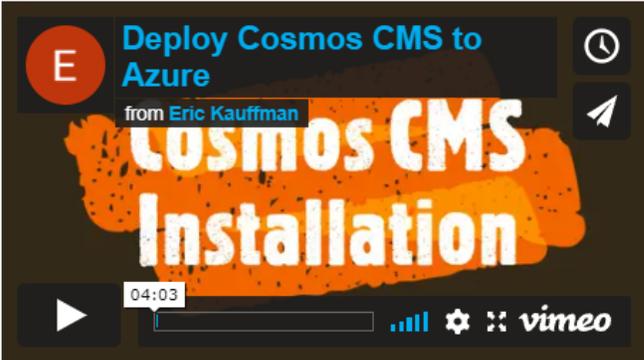
Quick install takes about 10 minutes to deploy Cosmos CMS.

Two things are needed before installation:

- A Microsoft [Azure Account](#) ([create](#)).
- A [SendGrid API key](#) ([create](#)).

Click this button to launch deployment:

[Deploy to Azure](#)



Video shows how to install Cosmos CMS in under 10 minutes.

### Installation Steps

The video shows how to install the software. Specific steps are listed below.

- SendGrid Configuration:
  - Click the "Outputs" tab on left of the install page after the template finishes.
  - Copy the list of IP addresses and [add them your SendGrid account](#).
- Open the [Editor website](#) to setup the database and your admin account.
- Using the Azure Portal:
  - [Enable the static website](#) on the storage account.
  - On the [Editor website](#), go to configuration and app settings and remove the value "CosmosAllowSetup."
- Close all web browsers when complete

### What Gets Installed

# CODE EDITING

```
Code Editor  ⌵  ⋮  <> Header Block  <> Html Content  <> Footer Block

1  <script src="/ccms/js/cosmosUtils.js"></script>
2  <div class="container-fluid">
3      <div class="row">
4          <div class="col-md-12 mt-4 mb-4 text-center" contenteditable="true" style="height: 100%;">
5              <h1>Cosmos Installation</h1>
6          </div>
7      </div>
8  </div>
9  <div class="container">
10     <div class="row">
11         <div class="col-md-3">
12             <h4>Table of Contents</h4>
13             <div id="divToc"><ul><li><a href="/get_started/first_web_page">First Web Page</a></li><li><a href="/get_started/install">
14                 <script>
15                     cosmosBuildTOC("divToc", "Get Started");
16                 </script>
17             </div>
18             <div class="col-md-9" style="height: 100%;">
19                 <div class="row">
20                     <div contenteditable="true" class="col-md-6">
21                         <h4 class="">Quick Install</h4>
22                         <p>Quick install takes about 10 minutes to deploy Cosmos CMS.</p>
23                         <p>Two things are needed before installation:</p>
24                         <ul>
25                             <li>A Microsoft <a target="_blank" href="https://azure.microsoft.com/en-us/free/">Azure
26                                 Account</a> (<a href="https://azure.microsoft.com/en-us/free/" title="Click to create an Azure account
27                                 key</a> (<a href="https://docs.sendgrid.com/for-developers/partners/microsoft-azure-2021#api-keys" title="Click to
28                                 key</a> (<a target="_blank" href="/get_started/install/sendgrid" title="Click to create a SendGrid ac
29                         </ul><p>Click this button to launch deployment:</p>
30                         <p>
31                             <a target="_blank" href="https://portal.azure.com/#create/Microsoft.Template/uri/https%3A%2F%2Fraw.githubusercontent.com
32                                |    |    | CITY of <u>BOSTON</u>                                                                 |
|    |    |    |    |
|  |  |  |  |

# Why have a design system?

- **Cohesive & consistent user experiences**

Services and products that use the design system feel the same, even when they have their own identity. This puts the focus on what Californians need to do.

- **Tested solutions**

We test components before releasing them. This lets departments deploy them with confidence without having to do their own testing.

- **Leverage best practices across California**

The design system captures tried-and-true best practices and allows other teams to use them. As new best practices emerge, the design system absorbs them, upgrading all products.

# Why have a design system? (continued)

- **Accessibility and performance**

All design system components meet WCAG 2.1 accessibility standards. The components take accessibility further by incorporating high performance so they work well across a range of devices and internet speeds.

- **Shared vocabulary**

A common language for components, patterns, and conventions eases collaboration within and across teams.

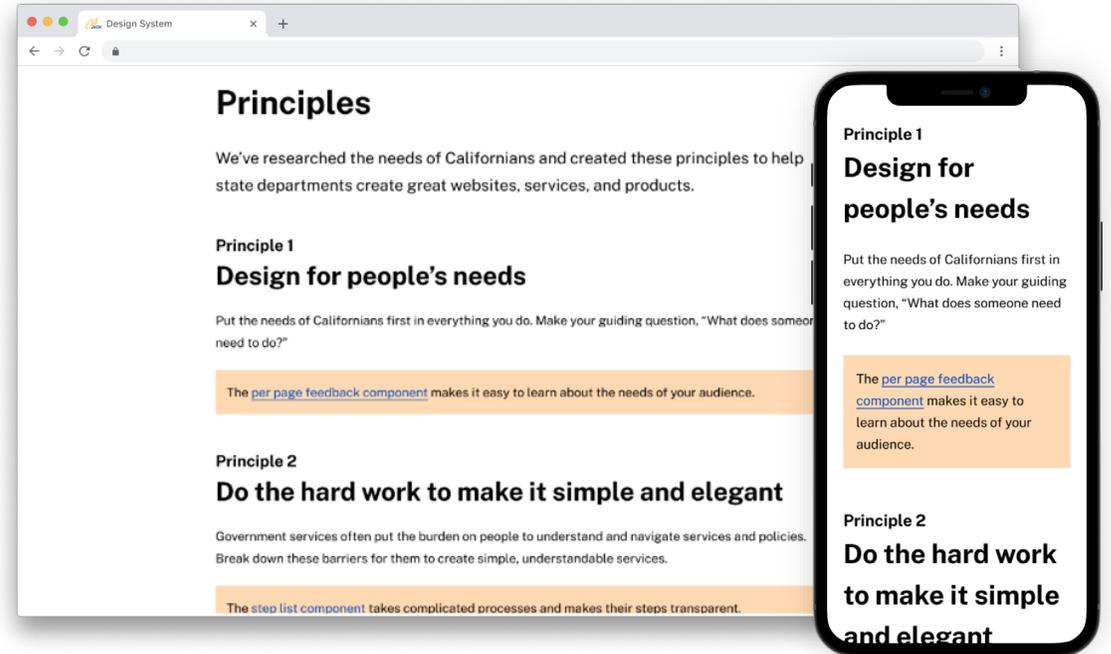
- **Effective use of resources**

With common problems already solved, designers and developers can speed through the basics, doing more with less time and budget.

# What's in our design system?

## Digital product development principles

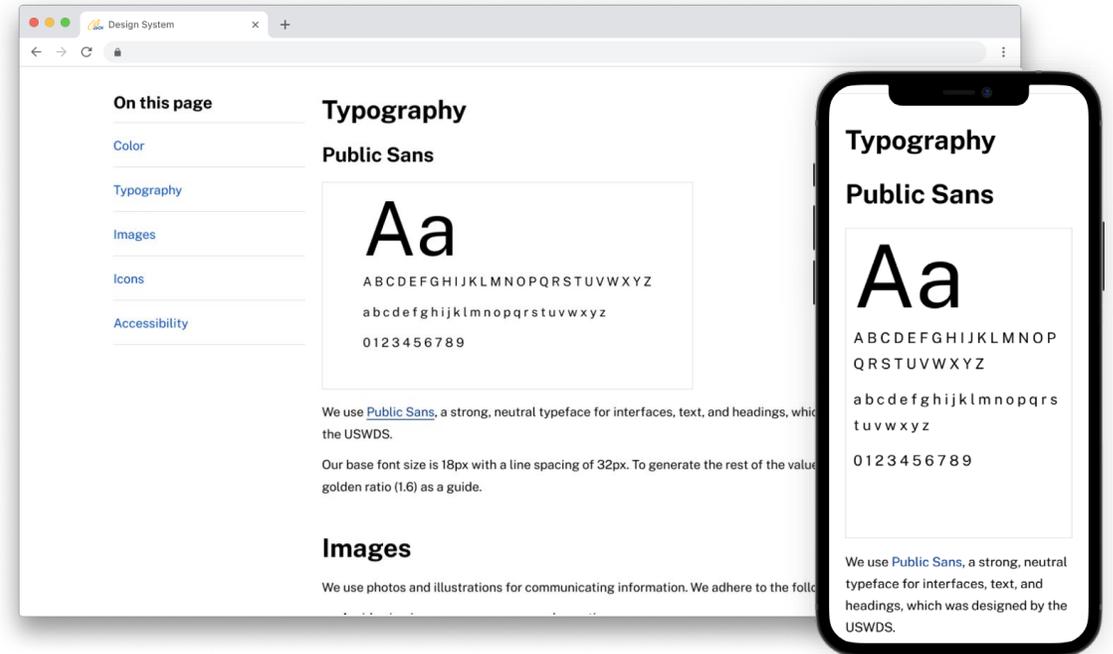
Designing excellent services and products is hard. The design system has best practices guide you in your journey.



# What's in our design system? (cont.)

## Content and design guides

Design systems are only as good as what goes in them. The content and design guides help you consistently build quality services and products.

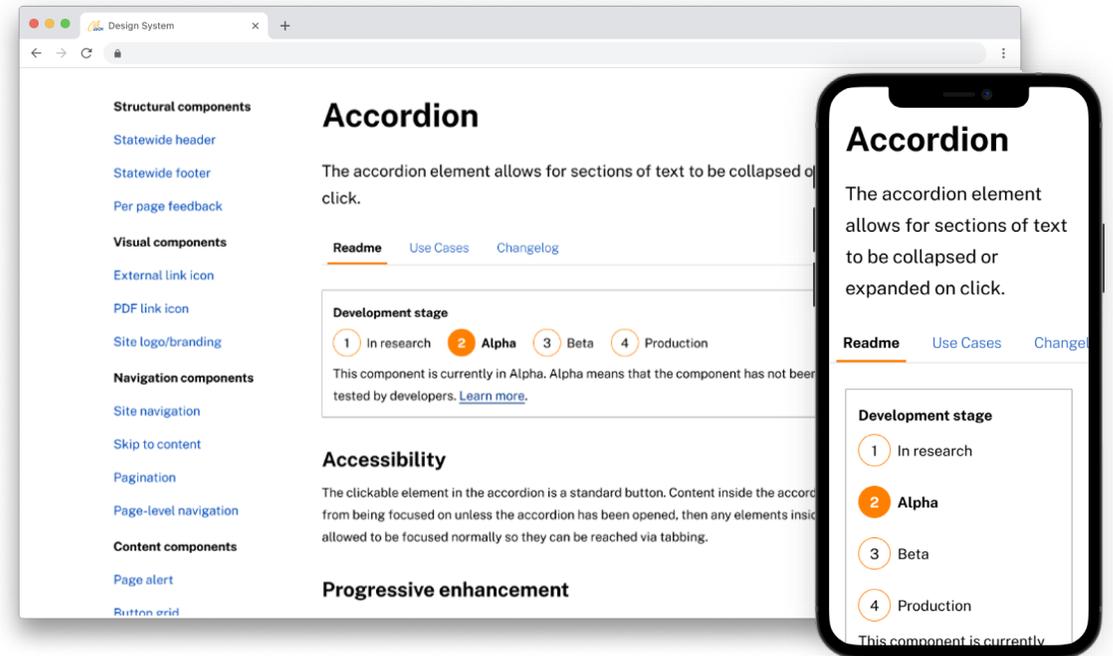


# What's in our design system? (continued)

## Component library

You do not have to reinvent the wheel every time you need a digital solution. The components solve common user needs for you.

The components can help create common user journeys.



# Creating a design system for CA.gov

# Design system history

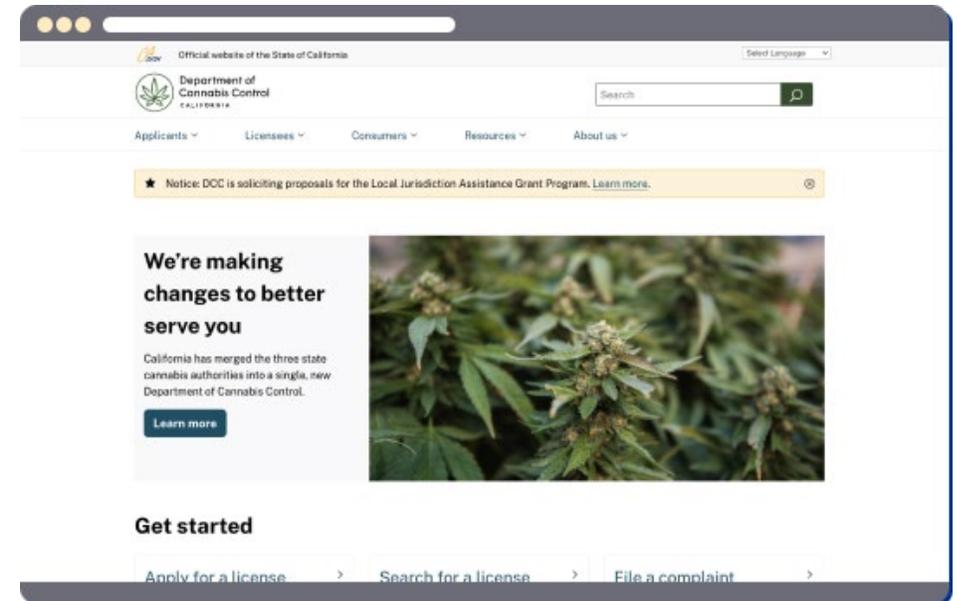
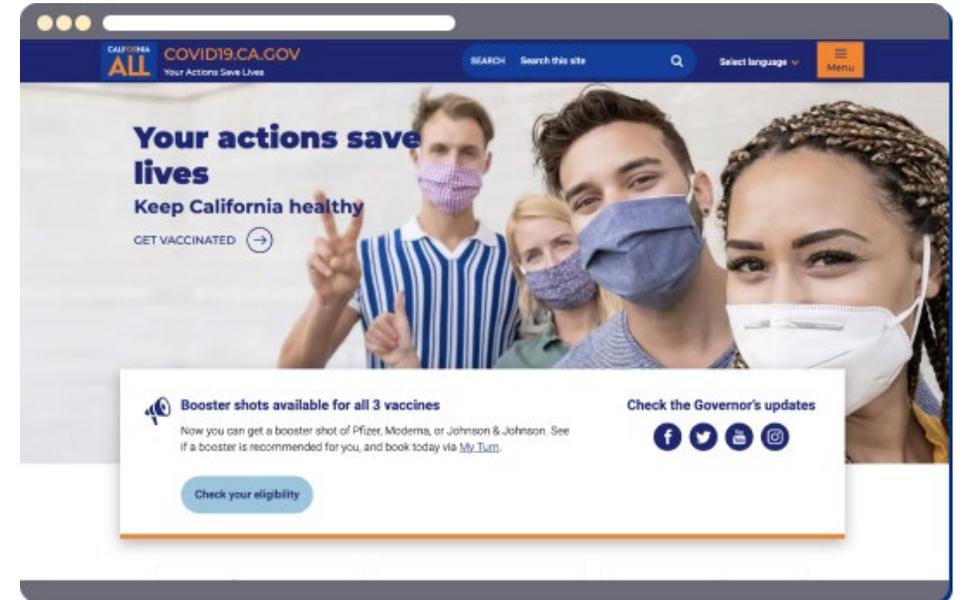
**alpha.ca.gov** - Develop approaches of design, content, research, product management and engineering (*Late 2019 - COVID-19*)

**covid19.ca.gov** - Work together, iterate constantly, use feedback, learn a lot (*March 2020 - Present*)

**cannabis.ca.gov** - Adapt learnings from COVID-19 project and apply content design to merge 4 sites into one. Establish Design System patterns and processes (*July 2021 - Present*)

**drought.ca.gov** - Work on creating repeatable system, starting to scale (*July 2021 - Present*)

**Design System** - Share principles, design, code, build community of practice (*Coming soon*)



# Build on lessons learned

## **Performance**

Many vendor platforms offer “the whole kitchen sink” with their widgets. These JavaScript bundles often won’t load on mobile devices. Test often with Lighthouse.

## **Emphasize design**

Shift from traditional web “page layout” approaches to using researched UX patterns that help Californians access services.

## **Simplicity**

When sites are written in plain-language and designed for ease of use, everyone wins.

## **Collaboration**

Because our code uses the common languages of HTML, CSS and JavaScript, developers from different technical and experiential backgrounds can work together.

# Design system web technology principles

## **Clean CSS**

Create base CSS styles that support consistent, clear UI on all digital service experiences.

## **Web components**

Create light re-usable W3C-compliant web components for displaying content, information, charts, and other functional elements that Californians need.

## **Equity-focused**

Consider performance on all devices and bandwidths, accessibility, ease of translation, and inclusive practices.

## **Adaptable**

Stay agnostic to platforms and frameworks.

## **Integrations**

Make it easy for content creators to use Design System components in a variety of publishing systems, starting with WordPress.

## **Open source**

Work in the open on Github. Share and review code packages.

# Components

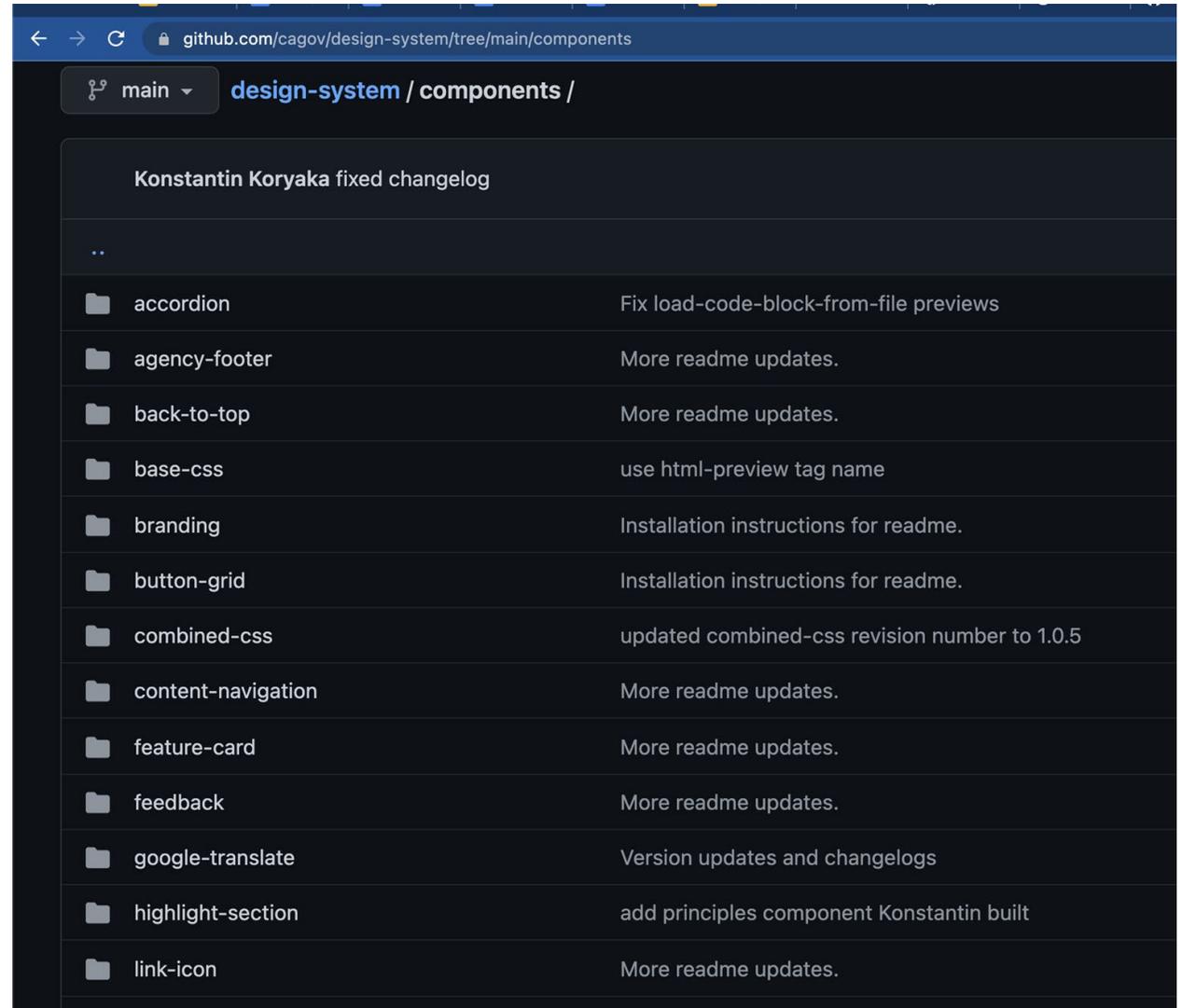
Code is sourced from COVID-19, Department of Cannabis Control, and drought.ca.gov web projects.

## Kinds of components

- Structural
- Navigation
- Content
- Visual
- Service

## Reviewed, documented and tested for:

- Accessibility
- Performance
- Translatability
- Progressive enhancement
- Style integration
- Integration into WordPress



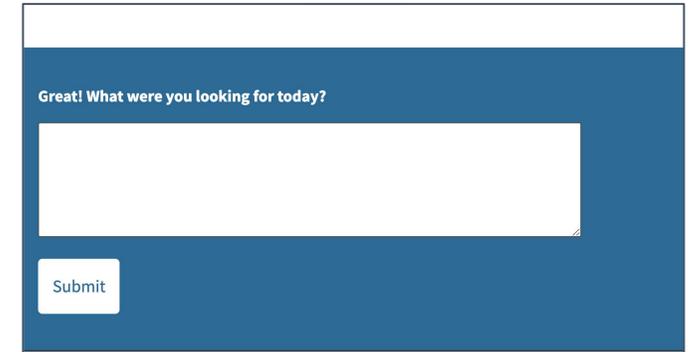
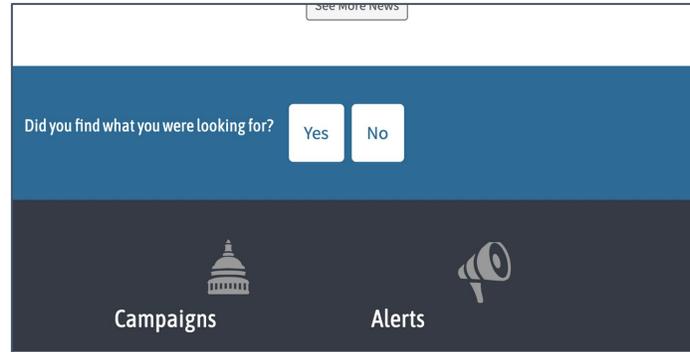
# Example: Page Feedback

Component used on multiple ca.gov properties

The page feedback component lets people react to specific pages on your website.

The page feedback component is intended to:

- Let people alert us to bugs or out-of-date content
- Inform iterations to content pages
- Determine hierarchy and priority of information
- Identify themes in user sentiment
- Pinpoint missing or confusing content
- Identify specific spikes in feedback related to events

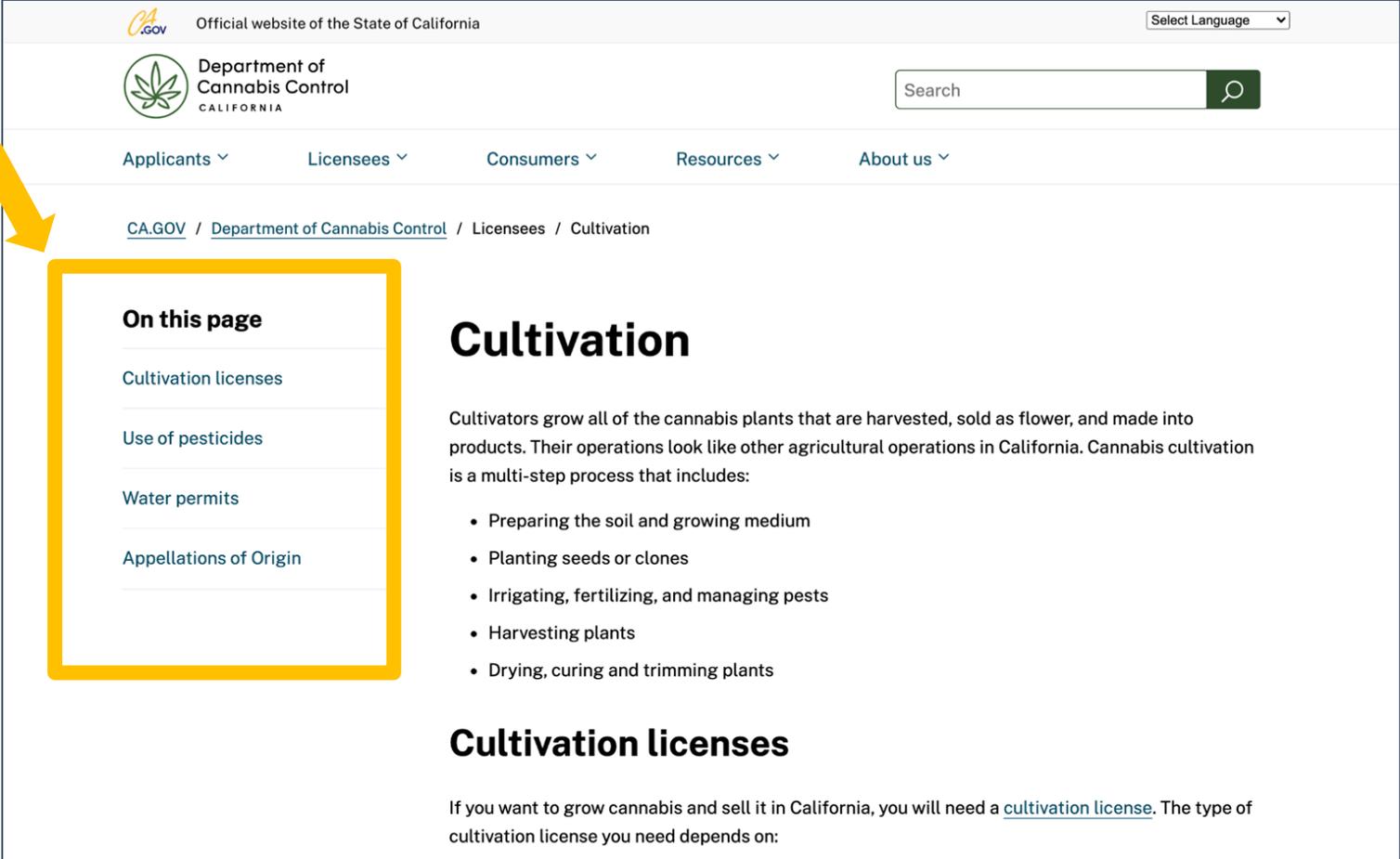


**Now on CA.gov.** Also appearing on cannabis.ca.gov, covid19.ca.gov and drought.ca.gov.

# Example: Page navigation

Page navigation makes it easy to see what's on a page. It allows people to scan a page and know if they're in the right place.

- Page navigation lists and links to the level 2 headings (H2) of a webpage.
- It is placed at the top of the page on the left.
- People can select a link to go directly to that section.
- The links are introduced by the text *On this page*.



The screenshot shows the official website of the State of California, Department of Cannabis Control. The page is titled "Cultivation" and is part of the "Licenses" section. A yellow arrow points to a yellow-bordered box on the left side of the page, which contains a "Page navigation" menu. This menu is titled "On this page" and lists four links: "Cultivation licenses", "Use of pesticides", "Water permits", and "Appellations of Origin". The main content area on the right features a large heading "Cultivation" followed by a paragraph explaining that cultivators grow cannabis plants for harvest and sale. Below this is a bulleted list of steps in the cultivation process: preparing soil and growing medium, planting seeds or clones, irrigating, fertilizing, and managing pests, harvesting plants, and drying, curing, and trimming plants. A second heading, "Cultivation licenses", is visible at the bottom of the page, with a paragraph indicating that a cultivation license is required for growing and selling cannabis in California.

Official website of the State of California

Department of Cannabis Control CALIFORNIA

Search

Applicants ▾ Licenses ▾ Consumers ▾ Resources ▾ About us ▾

CA.GOV / Department of Cannabis Control / Licenses / Cultivation

**On this page**

- [Cultivation licenses](#)
- [Use of pesticides](#)
- [Water permits](#)
- [Appellations of Origin](#)

## Cultivation

Cultivators grow all of the cannabis plants that are harvested, sold as flower, and made into products. Their operations look like other agricultural operations in California. Cannabis cultivation is a multi-step process that includes:

- Preparing the soil and growing medium
- Planting seeds or clones
- Irrigating, fertilizing, and managing pests
- Harvesting plants
- Drying, curing and trimming plants

## Cultivation licenses

If you want to grow cannabis and sell it in California, you will need a [cultivation license](#). The type of cultivation license you need depends on:

# About the components

## Component structure

- Modular
- HTML markup (custom element web component or a markup pattern)
- Support JS and CSS (usually as a JavaScript and CSS bundle from npm, or from CDN-hosted bundle)
- Documentation
  - Includes usage instructions, installation, accessibility, CSS, progressive enhancement status and content model.
  - Open source documentation generally includes README, CHANGELOG, ROADMAP

## How components can be used on a project

- Embed markup in an HTML page
- Integrate with editor tools
- Auto-generate compiled markup with scripts and data

# Built for performance

ODI's web performance and accessibility leaderboard

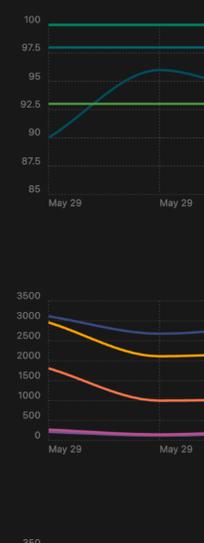
Website: <https://cagov.github.io/leaderboard/> Github repo: <https://github.com/cagov/leaderboard>,

| Rank | Trophy | URL                                                                                               | Lighthouse |     |     |         |                   |
|------|--------|---------------------------------------------------------------------------------------------------|------------|-----|-----|---------|-------------------|
| #1   | 🏆🏆     | <a href="https://digital.ca.gov/">digital.ca.gov/</a>                                             | 100        | 100 | 100 | 100 🤖   | ▶ Data and Graphs |
| #2   | 🏆      | <a href="https://alpha.ca.gov/">alpha.ca.gov/</a>                                                 | 98         | 100 | 100 | 100 398 | ▶ Data and Graphs |
| #3   | 🏆      | <a href="https://drought.ca.gov/">drought.ca.gov/</a>                                             | 98         | 100 | 100 | 100 398 | ▶ Data and Graphs |
| #4   |        | <a href="https://covid19.ca.gov/">covid19.ca.gov/</a>                                             | 97         | 98  | 100 | 93 388  | ▶ Data and Graphs |
| #5   |        | <a href="https://headless.cannabis.ca.gov/">headless.cannabis.ca.gov/</a>                         | 91         | 100 | 93  | 91 375  | ▶ Data and Graphs |
| #6   |        | <a href="https://vision2023.cdt.ca.gov/">vision2023.cdt.ca.gov/</a>                               | 72         | 100 | 100 | 99 371  | ▶ Data and Graphs |
| #7   |        | <a href="https://projecttracking.technology.ca.gov/PAL">projecttracking.technology.ca.gov/PAL</a> | 90         | 100 | 87  | 92 369  | ▶ Data and Graphs |
| #8   |        | <a href="http://www.clrc.ca.gov/">http://www.clrc.ca.gov/</a>                                     | 96         | 98  | 80  | 92 366  | ▶ Data and Graphs |
| #9   |        | <a href="https://tech.covid19.ca.gov/">tech.covid19.ca.gov/</a>                                   | 77         | 100 | 87  | 100 364 | ▶ Data and Graphs |

| Rank         | Trophy | URL  | Lighthouse |                |       |       |     | Axe |
|--------------|--------|------|------------|----------------|-------|-------|-----|-----|
| Date         | Rank   | Perf | A11Y       | Best Practices | SEO   | Axe   |     |     |
| Aug 05 19:14 | #4     | 97   | Calculator | 98             | ✓ 100 | 93    | 🔴 2 |     |
| Aug 02 13:08 | 🏆 #3   | 97   | Calculator | 98             | ✓ 100 | ✓ 100 | 🔴 2 |     |
| May 29 21:00 | 🏆 #3   | 96   | Calculator | 98             | ✓ 100 | 93    | ✓ 0 |     |
| May 29 14:23 | 🏆 #3   | 94   | Calculator | 98             | ✓ 100 | 93    | ✓ 0 |     |
| May 29 14:19 | 🏆 #1   | 96   | Calculator | 98             | ✓ 100 | 93    | ✓ 0 |     |
| May 29 13:17 | #6     | 90   | Calculator | 98             | ✓ 100 | 93    | ✓ 0 |     |

| Date         | Core Web Vitals |                   |         |        | Web Vitals |       |       |
|--------------|-----------------|-------------------|---------|--------|------------|-------|-------|
|              | LCP             | Max Potential FID | TBT     | CLS    | FCP        | SI    | TTI   |
| Aug 05 19:14 | 2.05s           | 165ms             | 284ms   | 0.03   | 1.03s      | 1.15s | 2.05s |
| Aug 02 13:08 | 1.22s           | 182ms             | △ 305ms | 0.03   | 1.01s      | 1.01s | 2.03s |
| May 29 21:00 | △ 2.66s         | 122ms             | 150ms   | △ 0.10 | 1.01s      | 1.01s | 2.12s |
| May 29 14:23 | △ 2.81s         | 183ms             | 231ms   | △ 0.10 | 1.03s      | 1.03s | 2.18s |
| May 29 14:19 | △ 2.68s         | 122ms             | 149ms   | △ 0.10 | 1.00s      | 1.00s | 2.11s |
| May 29 13:17 | △ 3.12s         | 215ms             | 273ms   | △ 0.10 | 1.81s      | 1.81s | 2.96s |



# Measuring performance

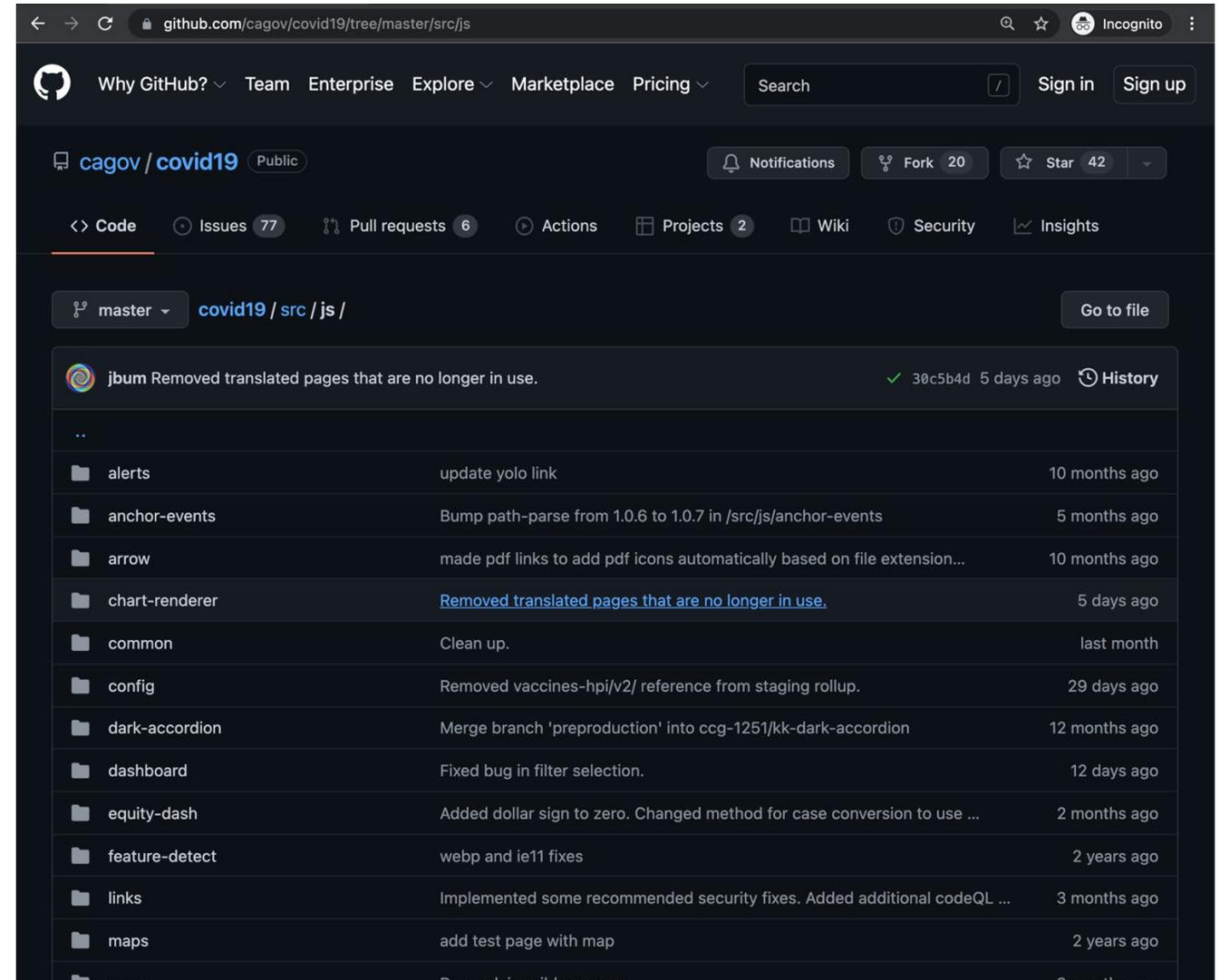
Example of lower performing sites. Many State websites have low performance scores. This impacts users on mobile devices, who may not be able to easily access critical services and information.

We recommend you test performance on your sites with <https://web.dev/measure>.

|      |                                                                              |    |     |    |    |     |                   |
|------|------------------------------------------------------------------------------|----|-----|----|----|-----|-------------------|
| #101 | <a href="http://webstandards.ca.gov/">webstandards.ca.gov/</a>               | 44 | 97  | 73 | 99 | 313 | ► Data and Graphs |
| #102 | <a href="http://courtreportersboard.ca.gov/">courtreportersboard.ca.gov/</a> | 27 | 93  | 93 | 98 | 312 | ► Data and Graphs |
| #103 | <a href="http://dir.ca.gov/chswc/">dir.ca.gov/chswc/</a>                     | 26 | 94  | 83 | 99 | 312 | ► Data and Graphs |
| #104 | <a href="http://sierranevada.ca.gov/">sierranevada.ca.gov/</a>               | 43 | 98  | 87 | 84 | 312 | ► Data and Graphs |
| #105 | <a href="http://women.ca.gov/">women.ca.gov/</a>                             | 49 | 99  | 73 | 91 | 312 | ► Data and Graphs |
| #106 | <a href="http://alrb.ca.gov/">alrb.ca.gov/</a>                               | 42 | 95  | 80 | 95 | 312 | ► Data and Graphs |
| #107 | <a href="http://naturopathic.ca.gov/">naturopathic.ca.gov/</a>               | 30 | 97  | 87 | 98 | 312 | ► Data and Graphs |
| #108 | <a href="http://census.ca.gov/">census.ca.gov/</a>                           | 47 | 95  | 87 | 83 | 312 | ► Data and Graphs |
| #109 | <a href="http://osg.ca.gov/">osg.ca.gov/</a>                                 | 40 | 100 | 73 | 98 | 312 | ► Data and Graphs |
| #110 | <a href="http://energy.ca.gov/">energy.ca.gov/</a>                           | 33 | 100 | 93 | 85 | 311 | ► Data and Graphs |
| #111 | <a href="http://fiduciary.ca.gov/">fiduciary.ca.gov/</a>                     | 28 | 91  | 93 | 96 | 310 | ► Data and Graphs |

# Underlying tech stack of top performing sites

- Cloudfront CDN
- AWS s3 buckets
- GitHub
- CI/CD (GitHub actions)
- Static site generating tool (11ty + ODI tooling)
- Web components
- Sass and CSS Variables
- Content API + Middleware
- Markdown + HTML
- WordPress CMS editor or Github as flat-file data source
- Azure Functions as a service (FaaS)



# Technical Skills

Modern web stack technology skills levels playing field for collaboration and hiring

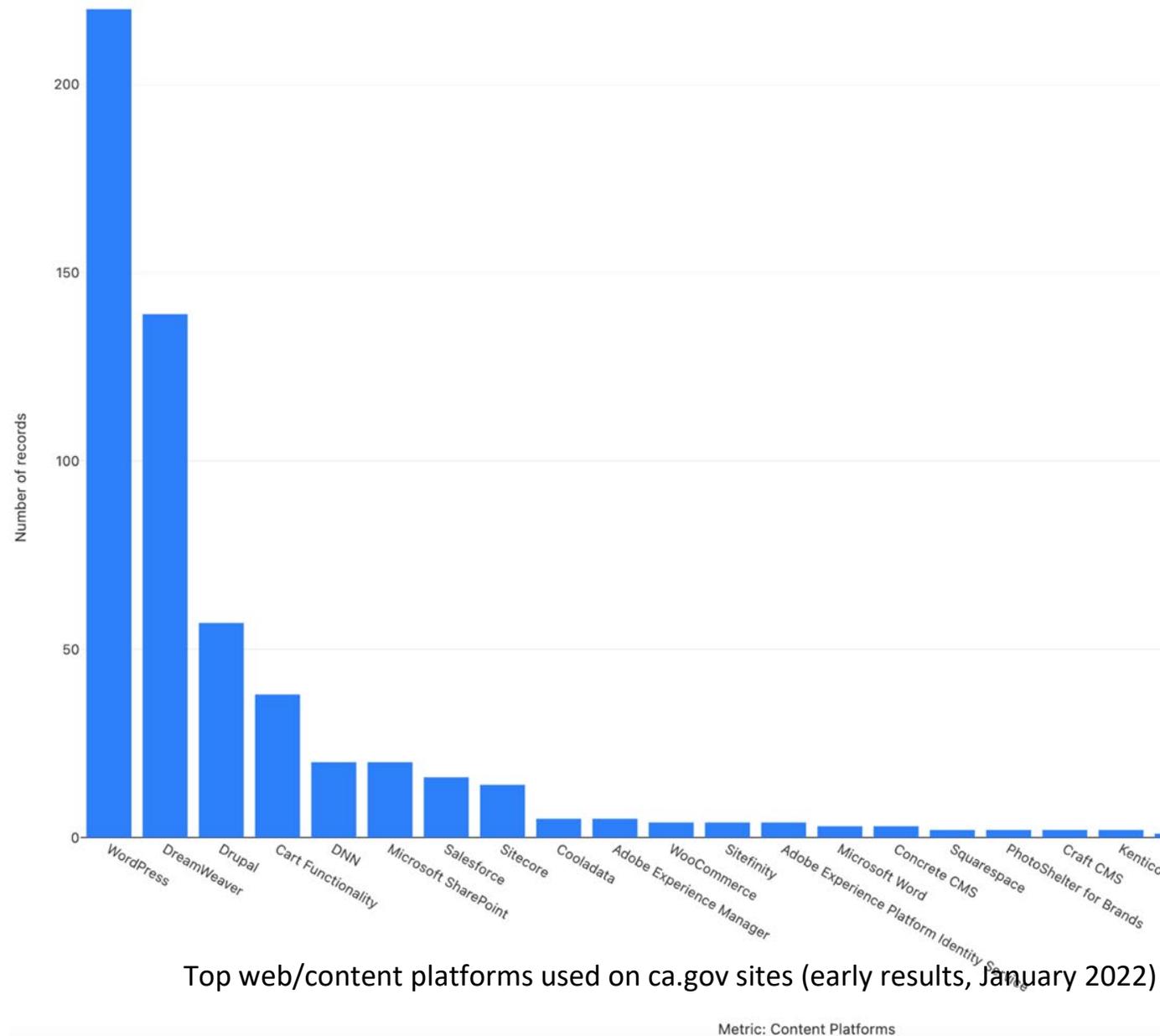
- W3C standard **Web components** (JavaScript ES6+, HTML, SASS, CSS Variables, JSON, Markdown)
- Github and CI/CD
- Static site generation
- Using npm packages
- Accessibility, web performance, translations
- Working with content and data APIs
- Creating FaaS/microservices (Azure, LAMBDA)
- Responsive web development

# Technical roadmap

- Release first batch of components and website
- Review and feedback
- Improve system and communications
- Connect with a few partners for next round of projects
- Continuously research component upgrades
- Develop support capacity
- Review contributions
- Continue with publishing integrations (WordPress on multiple platforms, Static site workflows, Modern CMS explorations, Microsoft products, Drupal and others as decided)

# Integrations

- First integration for WordPress in the works with CAWeb publishing
- Creating a dataset of CMS use across all State domains
- Top platforms found from initial research:
  - WordPress
  - Static HTML
  - Drupal
  - Microsoft products
  - “Long tail” of other CMSs
- Research emerging API-first CMSs



# Process

## Develop and build

- Start with user needs
- Research, Design, Prototype
- Feedback and user-testing
- Iterate

## Propose a Design System project

- If you have a useful project, let Design System team know and we will direct you to guidance.
- Submit proposal

## Contribute

- Create web components
- Meet technical requirements
- Design and technical review and feedback period
- Take project through Alpha, Beta and Production stages
- Develop support plan

# Partner with us!

User Research  
and Testing

Feedback and  
Ideas

UX Design

Development

Get Involved!



# DIGITAL WEB SERVICES NETWORK

## Sneak Peek

Adam Little

Designer

California Office of Digital Innovation



# DIGITAL WEB SERVICES NETWORK

## Panel Discussion

Moderator: Ehb Teng, ODI

Adam Little, ODI

Chach Sikes, ODI

Art Khomishen, CDT

Koji Kumpulainen, CDT



# DIGITAL WEB SERVICES NETWORK

## Suggested Future Topics Closing Remarks

**Blaine Wasykiw**

Chief Web Officer

California Department of Technology

# Thank you

Post conference materials will be published on the [DWSN Website](#).

For questions, please write to: [DigitalWebServicesNetwork@state.ca.gov](mailto:DigitalWebServicesNetwork@state.ca.gov)



Bringing together digital product managers, designers, and engineers.



# DIGITAL WEB SERVICES NETWORK

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## Next DWSN Quarterly Forum Thursday, April 21, 2022