

FORMFEST

2025

BETTER GOVERNMENT, ONE FORM AT A TIME

Form-ing an Open Source Culture in Federal Agencies

Open Source Program Office (OSPO)

Digital Service at Centers for Medicare and Medicaid Services

<https://github.com/DSACMS/decks/blob/main/formfest2025.pdf>

Formfest 2025 Agenda

1. Who are we?
2. What is CMS?
3. What is the Digital Service at CMS?
4. What is Open Source?
5. What is an Open Source Program Office?
6. What is the SHARE IT Act?
7. What is our SHARE IT stack?
 - a. share-it-landing-page
 - b. codejson-generator
 - c. automated-codejson-generator
 - d. index-generator
8. DEMO TIME!
9. What is the potential impact?
10. What questions and feedback do y'all have? (Q&A)



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What are the Centers for Medicare and Medicaid Services? (CMS)

“CMS is the federal agency that provides health coverage to more than 160 million through **Medicare**, **Medicaid**, the **Children's Health Insurance Program**, and the **Health Insurance Marketplace**. CMS works in partnership with the entire health care community to improve quality, equity and outcomes in the health care system.”

Who we serve: The American People

67.8 M

**Medicare Beneficiaries
(2023)**

82.3 M

**Medicaid Beneficiaries
(2023)**

21.1 M

**Healthcare.gov
(2023)**

Who we serve: Taxpayers

\$1.76_T

**CMS Budget
22% of the
federal budget
(FY 2024)**

\$ 1.05_T

**Total Medicare Payments
(FY 2024)**

\$ 846_B

**Total Medicaid Payments
(FY 2024)**

<https://data.cms.gov/fact-sheet/cms-fast-facts>

<https://www.govinfo.gov/content/pkg/BUDGET-2025-BUD/pdf/BUDGET-2025-BUD.pdf>

<https://www.cms.gov/files/document/cms-financial-report-fiscal-year-2024.pdf>

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Who we serve: The Healthcare System

6,613

**CMS Employees
(FY 2024)**

1.5M

**Health Care Providers
(2024)**

22%

**National Health Care
Spending is Medicare
(2024)**

What does the Digital Service at CMS do?

We transform the US Healthcare System by



Improving design and
user experiences



Delivering value to
government, providers,
and patients



Modernizing systems



Participating in Policy
Development

How do we do it?

We deploy **small groups** of designers, engineers, and product managers on a **"tour of duty"** to work alongside **dedicated civil servants**.

These **multidisciplinary teams** bring best practices and new approaches to support government **modernization** efforts.



What is Open Source Software?

Source code that anyone can **inspect**, **modify**, **enhance**, and **share**.

96% of all commercial software contains open source code, representing **\$8.8T** of value if it had to be rewritten from scratch.

What does an Open Source Program Office (OSPO) do?

An Open Source Program Office (OSPO) serves as the center of competency for an organization's open source operations, strategy, and structure.

An OSPO is responsible for defining and implementing **programs**, **policies**, and **projects** to guide these efforts.

30% of Fortune 100 companies have implemented an OSPO, with 84% of OSPOs developing or managing GenAI infrastructure.

CMS is the **first** United States Federal Agency to implement this private-sector styled approach to an Open Source Strategy.



Save us Money



Save us Time



Reduce Duplicate Work



Reduce Duplicate Costs



Reduce Security Risk



Reduce Continuity Risk



Accountability for Contract Performance



Engine for Talent

SHARE IT Act: Summary

"This bill requires federal agencies to ensure that custom-developed code (i.e., source code that is produced under an agency contract, funded exclusively by the federal government, or developed by federal employees as part of their official duties) and certain technical components of the code such as architecture designs and metadata are

- (1) owned by the agency,*
- (2) stored at no less than one public or private repository, and*
- (3) accessible to federal employees under certain procedures. Agency contracts for custom-development of software must acquire and exercise rights sufficient to allow government-wide access, sharing, use, and modification of any custom-developed code.*

The bill does not apply to source code that is classified, developed primarily for use in a national security system, or developed by an element of the intelligence community. An agency's office of the chief information officer may exempt source code from being shared or made publicly accessible to protect individual privacy." [Bill Summary](#)

SHARE IT Act Landing

 **SHARE IT Act**

[Home](#) [Documentation](#) [Tools](#) [Quiz](#) [GitHub](#)

Enabling Reuse of Federal Source Code

Streamlining compliance and reducing burden of creating and maintaining software repository metadata through automation, open standards, and open source.

[Get Started](#) [View on GitHub](#)


What is the SHARE IT Act?

"This bill requires federal agencies to ensure that custom-developed code (i.e., source code that is produced under an agency contract, funded exclusively by the federal government, or developed by federal employees as part of their official duties) and certain technical components of the code such as architecture designs and metadata are

Website with legislative information, guidance, and a toolkit:
<https://dsacms.github.io/share-it-act-lp/>

Tools

Utilities and tools to help generate, validate, and manage, and visualize repository metadata.


 Webform

Web Form Generator

A step-by-step interactive web form for creating, generating, and downloading a valid code.json file.

Interactive Browser

[Open Tool](#)


 CLI

Index Generator

Python-based CLI tool that scans GitHub repositories for code.json files, and generates an index file for agency-wide reporting.

Python Aggregation

[View on GitHub](#)

 GitHub Action

Automated Generator

GitHub Action that automatically generates and updates code.json files. It can compute labor hours, detect languages, and maintain accurate metadata.

Automation CI/CD

[View on GitHub](#)

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codejson-generator

A webform where users can enter required metadata and generate a code.json file to add to their repository

Features include:

- Offers four methods to save metadata: copy, download, send pull request, email
- Automation of 14 out of 34 fields using GitHub API
- Includes an Exemption Classification Checklist

<https://dsacms.github.io/codejson-generator/>

Welcome to Gov Code.json Generator!

code.json generator is a web form designed to help government teams create a code.json file containing project metadata in compliance with the SHARE IT Act.

Complete the form below to create a code.json file for your project.

Afterwards, the code.json file must be added to the repository. To save the file, you can:

- copy its contents
- download the file locally
- create a pull request to the repository
- email the file

Visit the [SHARE IT Act Landing Page](#) for more information.

1 Identify your project's classification

My project is considered:

- ☐ Open Source
This project is publicly available and licensed under terms that allow others to use, modify, and distribute it (e.g. github.com)
- ☐ Government Wide Reuse
The project is available internally for government wide use (e.g. github.cms.gov)
- ☐ None of the above
The project may be considered exempted from sharing and reuse as per the SHARE IT Act and M-16-21.

Submit

2 Auto Generate Fields

Enter your repository's GitHub URL in order to automatically pre-fill some of the fields in this form

*This currently only works on **public** repositories*

GitHub Repository URL

Submit

3 Complete the entire form to generate the code.json file

A red asterisk () indicates a required field*

name *

Name of the project or software

version (optional)

The version for this release. For example, '1.0.0'.

description *

A one or two sentence description of the software.

status *

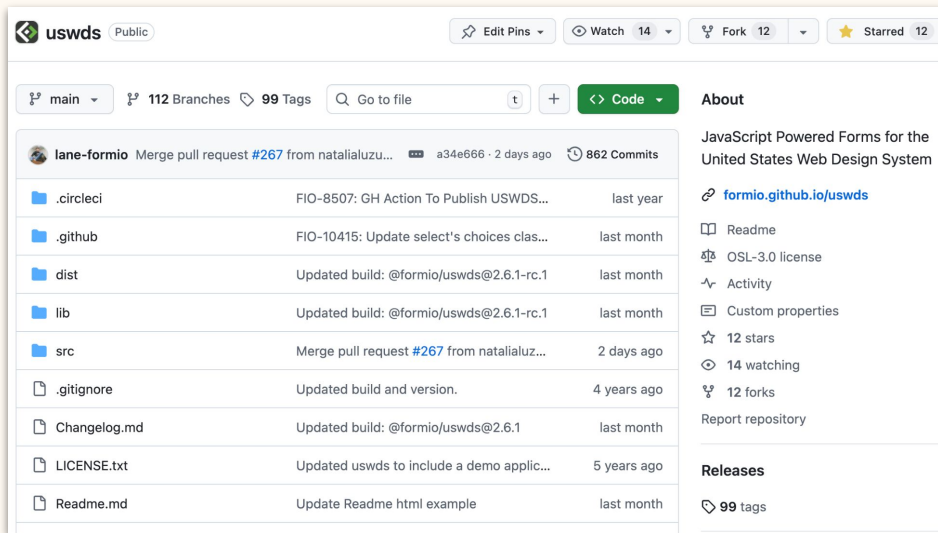
- ☐ Ideation
- ☐ Development
- ☐ Alpha
- ☐ Beta
- ☐ Release Candidate
- ☐ Production
- ☐ Archival

Form.io

- An open source platform for building forms
- Offers a [United States Web Design System \(USWDS\)](#) template
- Creates a tool that ingests json schemas and converts them into a form with components, mapping to each field using [form.io](#)
- [codejson-generator](#) ingests code.json schema file and produces a form for our metadata collection



U.S. Web Design System



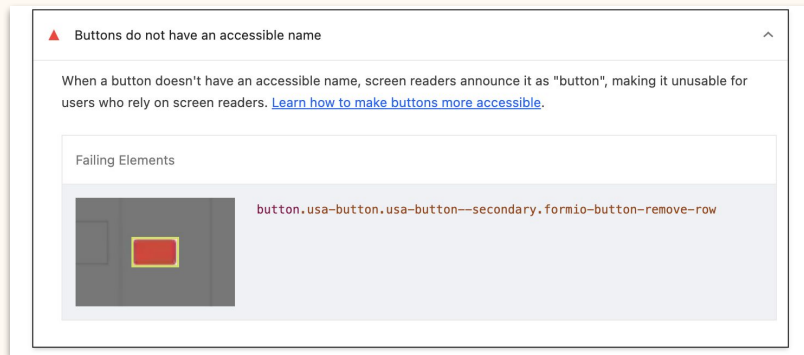
<https://github.com/formio/uswds>

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Contributions to USWDS Form.io Template

- Issue for project setup
 - [#260](#): Running code locally
- PRs for accessibility fixes
 - [#265](#): Add alt-text to Form.io logo
 - [#266](#): Add aria-label to button in datagrid component
- PRs for styling
 - [#267](#): Spacing between checkbox & radio button component and description
- All merged and in production!

[#266](#)



↓


```
{% if (ctx.hasExtraColumn) { %}
  {% if (!ctx.builder && ctx.hasRemoveButtons) { %}
    <td>
      - <button type="button" class="usa-button usa-button--secondary
        formio-button-remove-row" ref="{{ctx.datagridKey}}-removeRow" tabindex="
          {{ctx.tabIndex}}">
      + <button type="button" class="usa-button usa-button--secondary formio-
        button-remove-row" ref="{{ctx.datagridKey}}-removeRow" tabindex="
          {{ctx.tabIndex}}" aria-label="Remove row from data grid">
          <i class="{{ctx.iconClass('remove-circle')}}"></i>
        </button>
      </td>
```

automated-codejson-generator

- Using Github Actions, users can automatically fill out portions of code.json, reducing burden for projects.
- Users add our workflow to their repository, which can send a PR where users can then make manual edits on the web, instead of on the command line.
- This automates making a repository SHARE IT Act compliant initially, and in the future, and improves user experience.

Update code.json #17

 Open github-actions wants to merge 1 commit into [repolinter-results-#1](#) from [code-json-1741619752150](#) 

 Conversation 0  Commits 1  Checks 0  Files changed 1



github-actions bot commented last week

Contributor ...

Welcome to the Federal Open Source Community!

Hello, and thank you for your contributions to the Federal Open Source Community! 🙌

This pull request adding [code.json repository metadata](#) is being sent on behalf of the CMS Source Code Stewardship Taskforce, in compliance with [The Federal Source Code Inventory Policy, M-16-21](#), and in preparation for the [SHARE IT Act of 2024](#). If you have questions, please file an issue [here](#) or join our #cms-ospo slack channel [here](#).

Next Steps

Add Missing Information to code.json

- We have automatically calculated some fields but many require manual input
- Please enter the missing fields by directly editing code.json in Files Changed tab on your pull-request
- We also have a [form](#) where you can create your code.json via a website, and then download directly to your local machine, and then you can copy and paste into here.

If you would like additional information about the code.json metadata requirements, please visit the repository [here](#).



 Update code

```
code.json  +44  Viewed ...
... @@ -0,0 +1,44 @@
1 + {
2 +   "name": "gov-codejson",
3 +   "description": "CMS code.json: An agency-wide metadata standard for software
4 +   "longDescription": "This repository contains documentation on CMS code.json, a
   metadata standard used to collect information on the agency's software projects in
   compliance with M-16-21 and the SHARE IT Act.",
5 +   "status": "Production",
6 +   "permissions": {
7 +     "license": [
8 +       {
9 +         "name": "CC0 1.0 Universal",
10 +        "URL": "https://github.com/DSACMS/gov-codejson/blob/main/LICENSE"
11 +      }
12 +    ],
13 +    "usageType": "openSource",
14 +    "exemptionText": ""
15 +  },
```

codejson-index-generator

- The SHARE IT Act mandates Index files that aggregate metadata about all repositories on an agency level.
- A new frontend tool that can aggregate all code.json files within all repos in all GitHub organizations within an agency, to create the mandated index file, reducing burden for CMS, HHS, and others.
- Built into our Code.gov 2025 Rewrite using PyPi packaging and now supports multiple code forges.

The screenshot displays the 'codejson-index-generator' web interface. At the top, a blue button labeled 'Generate Index' is next to a progress indicator showing '50/50' with a full blue bar. Below this, the 'Results' section contains a summary: '34 out of 50 repositories have been successfully added and your index file has automatically been downloaded!' and '16 repositories were scanned but have issues with them and couldn't be added. You will find more information about these repositories below.' The results are divided into two columns: 'Successful Repositories' and 'Failed Repositories'. The 'Successful' column lists three items with green checkmarks: 'DSACMS / open', 'DSACMS / dsacms.github.io', and 'DSACMS / dedupliFHIR', all marked 'Successfully added'. The 'Failed' column lists three items with red X marks: 'DSACMS / .github', 'DSACMS / drive2gource', and 'DSACMS / iv-doc-uploader', all marked 'No code.json found'.

Successful Repositories	Failed Repositories
✓ DSACMS / open Successfully added	✗ DSACMS / .github No code.json found
✓ DSACMS / dsacms.github.io Successfully added	✗ DSACMS / drive2gource No code.json found
✓ DSACMS / dedupliFHIR Successfully added	✗ DSACMS / iv-doc-uploader No code.json found

BONUS:

datajson-index-generator

- Title II of The [Evidence Act](#) requires agency Open Data Plans to make Federal data **publicly available by default**, through comprehensive searchable data inventories of all agency data assets
- The same frontend form we built to aggregate all code.json files was easily [forked and modified](#) to aggregate all data.json files as well!
- This is a **prime** example of the power of modular open source development to reduce burden and costs through reuse! The express purpose of the SHARE IT Act!

The screenshot shows the 'Index Generator' web application. At the top, there's a navigation bar with links for 'CLI Tool', 'GitHub', and 'Contact Us'. The main heading is 'Generate your agency's data.json index'. Below this, a paragraph explains the tool's purpose: 'This tool helps federal agencies compile and aggregate their data.json files. It automatically scans specified GitHub organizations, finds repositories containing data.json files, and combines them into a single index file.'

The 'Generate Index' section contains a form with two main inputs: 'GitHub Organizations' and 'GitHub Token'. The 'GitHub Organizations' input has a dropdown menu currently showing 'DSACMS' and a placeholder text 'Type and press Enter'. The 'GitHub Token' input has a placeholder text '(Optional but recommended to avoid rate limiting)' and a 'Show' button. Below these inputs is a 'Generate Index' button and a progress indicator showing '70/70'.

The 'Results' section displays the outcome of the scan. It states: '1 out of 70 repositories have been successfully added and your index file has automatically been downloaded! 69 repositories were scanned but have issues with them and couldn't be added. You will find more information about these repositories below.'

There are two columns of results:

- Successful Repositories:** A single entry for 'DSACMS / testing-repository' with the status 'Successfully added'.
- Failed Repositories:** Three entries, each with a red 'X' icon and the status 'No data.json found':
 - DSACMS / .github
 - DSACMS / open
 - DSACMS / dsacms.github.io

Demo Time!

Estimated Savings: Metadata Tools & Repo Reuse

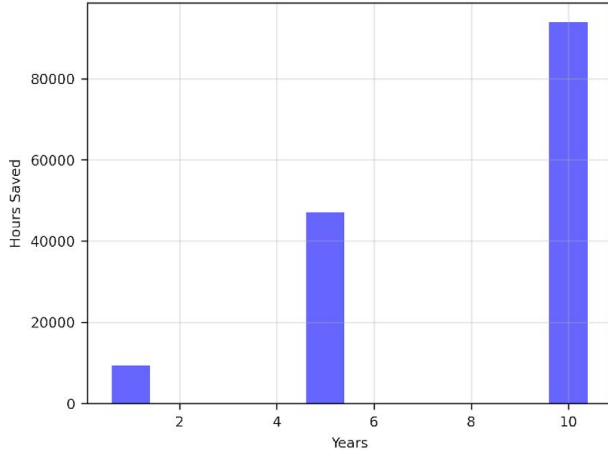
<https://github.cms.gov/ospo/shareitsavings?tab=readme-ov-file#methodology>

80% reduction, 1 hr per repository, 10K repos

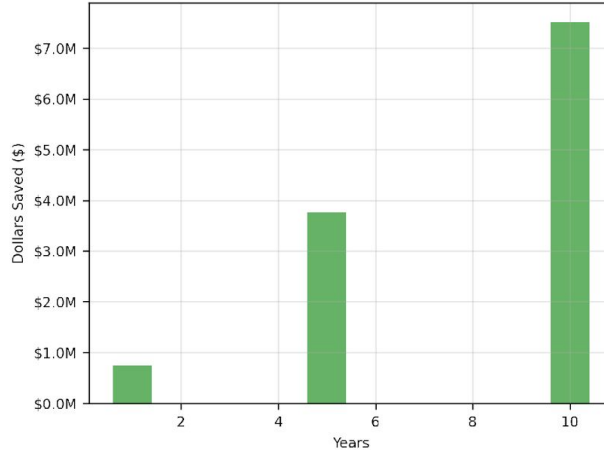
\$80/hr rate (GS 13/14 ~\$100-150, Contractor ~\$100-200)

CMS DME Budget of \$700M, at 80% reuse efficiency

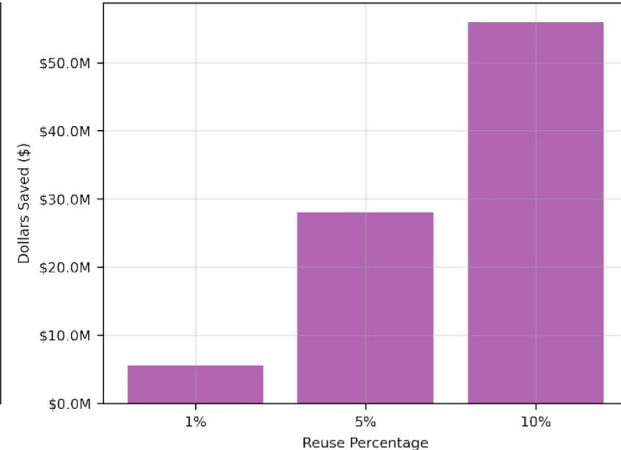
Metadata Automation: Time Saved for Reuse



Metadata Automation: Cost Savings for Reuse



Annual Code Reuse Savings Potential



Period	Time Savings	Cost Savings
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1 Year	9,400 hrs	\$752K (+\$205K)
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5 Years	47,000 hrs	\$3.76M
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10 Years	94,000 hrs	\$7.52M
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CMS's annual IT spending for internal and contractor-operated systems was ~\$2.8B (FY2023).

- Operations & maintenance: ~\$2.1B
- Development, Modernization, & Enhancement: ~\$700M

Reuse Rate	Cost Savings
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1% reuse	\$5M
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5% reuse	\$28M
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10% reuse	\$56M
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<https://github.com/DSACMS/share-it-savings>

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Thank You Formfest!



OSPO Landing Page:
SHARE IT Act Landing Page:
OSPO Email:
Formfest Deck:

go.cms.gov/ospo
go.cms.gov/shareit
opensource@cms.hhs.gov
github.com/DSACMS/decks/blob/main/formfest2025.pdf



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