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Authors

Vivien Devenyi (vivien.devenyi@wavestone.com)

Debora Di Giacomo (debora.digiacomio@wavestone.com)

Contact us



EU-OSOR@ec.europa.eu



<https://joinup.ec.europa.eu/collection/open-source-observatory-osor>



@OSOReu

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United States of America

Executive Summary

The General Services Administration (GSA) is a federal agency in the United States of America, and acts as the main actor toward encouraging the uptake of open source software (OSS) throughout the federal government. The GSA is in charge of multiple technology teams and services which further contribute to the increased use of OSS at the federal level in the USA. The public can access the agency's data, APIs and code, open for use, reuse, and contribution.

The Federal Source Code Policy (M-16-21), released in August 2016, was the first U.S. federal policy to support open source across the government. Though now archived, the Policy included a pilot for each federal government agency to release at least 20% of its newly acquired software code as open source, to be shared and reused by all federal agencies.

A notable initiative is the U.S. code.gov website. It was released as mandated by the Federal Source Code Policy, under the GSA, and is still active today. It is open for public contribution as well as available for all federal agencies to share their open source codes and projects.

Please note that this report focusses on OSS solely at the federal governmental level of the United States of America.

Actors

This section presents the key governmental bodies that are responsible for setting OSS policies and the main strategic players that work together with the government at all levels to raise awareness on OSS.

Policy makers

- The General Services Administration (GSA)¹ is an agency that was established in 1949. Its main role is to provide centralised procurement for the Federal Government. The GSA acts in accordance with the Federal Source Code Policy², and applies the principle of open source-first. Thus far, the GSA has achieved 88%³ open source coding across the agency. The GSA, for example, provides open source websites to the White House, such as the United States Web Design System⁴ (library of open source UI components and style guide of federal government

¹ <https://www.gsa.gov/>

² <https://open.gsa.gov/assets/files/GSAOSSPolicy.pdf>

³ Reported in August 2021.

⁴ <https://github.com/uswds/uswds>

websites) and analytics.usa.gov⁵ (website analytics of the federal government). GSA is active on GitHub⁶.

Strategic players

- 18F⁷ is a consultancy by and for the U.S. Government. It is part of the GSA's technology teams, composed of federal employees, and works together with other agencies, be they at federal, state or local governmental levels. The main task of 18F is to help government services improve user experience by building and buying technology. 18F's services vary widely in range, notable projects include modernising access to healthcare, enhancing the experience of a complaint portal, and improving the case management workflow of judicial entities. 18F builds openly by default, as stated in its open source policy.⁸
- An open source community⁹ was established by federal government employees and contractors who support the implementation of the Federal Source Code Policy and the Code.gov website. The community regularly organises events and can be contacted by the broader public with questions about OSS use in the federal government.
- Code for America¹⁰ is an organisation that partners with the government and communities in order to develop digital tools and services with the broader goal to improve government systems, policies and programmes. The organisations' projects include various OSS components and are open for contribution on GitHub¹¹.

Policy and legal framework

This section summarises the main federal-level open source software related policies and legal acts of the last ten years, including the first known milestone in this domain. The list is presented in a chronological order, starting from the most recent milestone.

- In May 2021, the White House published an Executive Order on Improving the Nation's Cybersecurity¹². As OSS is used at the federal level, the Executive Order requires that to the extent possible, that the integrity and provenance of the OSS be ensured. Furthermore, a Software Bill of Materials (SBOM) are to be provided to the purchaser, which is a list of elements of an application, where both proprietary and open source software may be included.
- The Federal Data Strategy¹³, published in 2020, aims to enhance the data management of federal agencies by providing a set of data principles and best practices. Among others, it

⁵ <https://github.com/18F/analytics.usa.gov#analyticsusagov>

⁶ <https://github.com/gsa>

⁷ <https://18f.gsa.gov/>

⁸ <https://18f.gsa.gov/open-source-policy/>

⁹ <https://digital.gov/communities/open-source/?promo>

¹⁰ <https://www.codeforamerica.org/>

¹¹ <https://github.com/codeforamerica>

¹² <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/05/12/executive-order-on-improving-the-nations-cybersecurity/>

¹³ <https://strategy.data.gov/action-plan/>

launched a pilot for the GSA to leverage the existing data.gov open source codebase. By doing so, “agencies with a cost-effective option to manage metadata and data assets, host data assets for public access, assist in the improvement in the quality of metadata and result in increased use and improved user experience for the public and for agencies”.

- The Federal Source Code Policy: Achieving Efficiency, Transparency, and Innovation through Reusable and Open Source Software¹⁴, released in 2016, and also referred to as OMB Memorandum M-16-21, aims to support the opening of data sets and collections of the government. The Policy requires that at least 20% of the newly built source code that was developed by or for the Federal Government is made available across all Federal agencies as OSS. It is also encouraged to go beyond that minimum requirement when possible, to release the code to the public. The website Code.gov¹⁵ was launched as part of the Policy. The Policy is now archived.
- The Digital Services Playbook¹⁶ was developed by the U.S. Digital Service. Former president Barack Obama highlighted¹⁷ this playbook in 2014 as one of the commitments of the government to backing OSS. Play 5 highlights that open source alternatives should be evaluated when contracting a service. Play 8 recommends digital services teams to consider open source software solutions at every layer of the stack. Finally, Play 13, encourages a default to open and publishing codebases under open source licences and making components available to the public as open source.
- The Clarifying Guidance Regarding Open Source Software (OSS)¹⁸ is a memorandum published by the Department of Defense in 2009. The documents described the benefits of OSS, specifically its reliability and security when the source code is peer-reviewed by developers. Based on this memorandum, the Consumer Financial Protection Bureau, established in 2012, adopted a source code policy, focussing on openness and sharing.¹⁹

Open source software initiatives

This section presents an overview of the main open source software related initiatives at the federal level in the United States of America.

- Shared services and tools offered by the General Service Administration (GSA) and other agencies that utilise OSS:

¹⁴ https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2016/m_16_21.pdf

¹⁵ <https://code.gov/>

¹⁶ <https://playbook.cio.gov/>

¹⁷ <https://e-pluribusunum.org/2014/09/24/usa-to-create-official-open-source-policy/>

¹⁸ <https://dodcio.defense.gov/Portals/0/Documents/OSSFAQ/2009OSS.pdf>

¹⁹ <https://www.consumerfinance.gov/about-us/blog/the-cfpbs-source-code-policy-open-and-shared/>

- Analytics.USA.gov²⁰: The website is a public dashboard that shows web traffic on U.S. federal governmental websites. It was built by 18F (part of GSA), the Digital Analytics Program²¹ (also part of GSA), and the U.S. Digital Service. The dashboard²² and data reporting system²³ are open source and released under CC0 public domain dedication. Several other organisations in the U.S. have reused the code for the creation of their
- Challenge.gov²⁴: The website acts as a hub for challenges and competitions launched by the U.S. federal government, in order to identify solutions. The organisations interested in launching a challenge can consult the toolkit²⁵ developed by the Challenge.gov team. Challenges in the 'software and apps' category often feature a focus on OSS.
- CitizenScience.gov²⁶: The website aims to accelerate the use of crowdsourcing and citizen science across the U.S. government. There are three key resources: a catalogue of projects, a toolkit for practitioners for the design and maintenance of a project, and a gateway to a community of practitioners and coordinators. Multiple projects feature OSS.
- Cloud.gov²⁷: Built and maintained by 18F, the Cloud.gov website adopts an open source policy: use and develop OSS that can be reused and adapted. The repositories are available on GitHub²⁸.
- Code.gov²⁹: The Code.gov website was established following the publication of the Federal Source Code Policy. It is used by federal agencies to share and reuse open source code, promote open source projects, as well as track compliance with federal open source policy.
- Data.gov³⁰: The data.gov website, created by the GSA, is based on CKAN (for the data catalogue) and WordPress (for the content), two open source projects. The website gathers all open data published by the U.S. Government.
- Federalist³¹: The Federalist is a publishing platform that uses open source in the public domain. Any organisations using the services are therefore also built using open source

²⁰ <https://analytics.usa.gov/?dq>

²¹ <https://digital.gov/guides/dap/>

²² <https://github.com/GSA/analytics.usa.gov>

²³ <https://github.com/18F/analytics-reporter>

²⁴ <https://challenge.gov/?dq>

²⁵ <https://www.challenge.gov/toolkit/>

²⁶ <https://citizenscience.gov/?dq>

²⁷ <https://cloud.gov/?dq>

²⁸

<https://github.com/search?utf8=%E2%9C%93&q=user%3A18F+%28cf+OR+cg+OR+%22cloud+foundry%22+OR+cloud.gov%29+NOT+cfn+fork%3Atrue&type=Repositories&ref=advsearch&l=&l=>

²⁹ <https://code.gov/?dq>

³⁰ <https://data.gov/?dq>

³¹ <https://federalist.18f.gov/?dq>

code. The main activity of Federalist is building, launching and managing government websites, which have exceeded 100. A total of nine U.S. government agencies power their websites with Federalist³².

- Search.gov³³: The documentation of the search.gov website³⁴ as well as the source code of the search engine are made available on GitHub³⁵.
- U.S. Digital Registry³⁶: The registry runs on the underlying OSS called Ringsail, built in Ruby on Rails. The registry gathers and makes available information available on official government social media accounts, mobile websites and apps. Federal employees are required to authenticate submissions.
- U.S. Web Design System (USWDS)³⁷: The USWDS is a visual style guide for U.S. federal government websites. It makes multiple codes available as open source for the website and design system code.³⁸ Furthermore, the open source community behind it, which started in 2015, is composed of governmental employees who support agencies and websites throughout the federal government.
- Pandemic Response Repository³⁹: The repository was created by the New America foundation⁴⁰. It is a collection of open source digital resources that governments may use to respond to the COVID-19 crisis. Projects can be sorted by different topics such as health, assistance, community, and research.
- Code.mil, 2017⁴¹: Launched in 2017, code.mil is an open source-focussed experiment by the U.S. Department of Defense (DoD). Throughout this (ongoing) initiative, a strategy was written by federal employees and later opened up for feedback from the open source developer community. Projects are in the process of launching and in the future, code.mil aims to also tackle challenges related to the procurement of source code. Code.mil is the DoD's corollary of code.gov.
- College Scorecard⁴²: Launched by the Department of Education, College Scorecard is an OSS website and application programming interface (API). It was developed for citizens, more precisely for future college and university students, who can use the free tools of the website to decide which institution to attend.

³² <https://federalist.18f.gov/success-stories/>

³³ <https://search.gov/?dq>

³⁴ <https://github.com/GSA/search-gov-website>

³⁵ <https://github.com/GSA/search-gov>

³⁶ <https://digital.gov/services/u-s-digital-registry/?dq>

³⁷ <https://designsystem.digital.gov/about/community/>

³⁸ <https://github.com/uswds/uswds>

³⁹ <https://newamericafoundation.github.io/pandemic-response-repository/>

⁴⁰ <https://www.newamerica.org/>

⁴¹ <https://code.mil/>

⁴² <https://collegescorecard.ed.gov/>

- API Strategy at GSA⁴³: The GSA’s API Strategy aims to define high quality standards for APIs which can then be used by other agencies. Open source plays a big role in the Agency’s API programme: the api.data.gov⁴⁴ website is an open source project, the developer portal is built on open source (USWDS), and public APIs have to provide an OpenAPI specification file⁴⁵ in their documentation thereby saving manual effort.
- Eligibility APIs Initiative⁴⁶: Formerly known as Eligibility Rules Service, the initiative by 10x aims to create a centralised web service that transforms the 50 states’ policies to systems. More specifically, it follows governmental updates to eligibility criteria for benefits programmes. With the input of Code for America, the open source benefits calculator for citizens, one of the outcomes of the initiative, has expanded to include the eligibility criteria for all 50 states.

⁴³ <https://digital.gov/2019/03/27/qa-with-ryan-day-about-gsas-api-strategy/>

⁴⁴ <https://api.data.gov/>

⁴⁵ <https://github.com/OAI/OpenAPI-Specification>

⁴⁶ <https://10x.gsa.gov/projects/eligibility-apis/>

