

CODE.GOV

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# SHAPING THE CONTRIBUTOR EXPERIENCE

Code.gov  
Shaping the Contributor Experience



**SARA COPE**  
(she/her)

 [@saracope](#)  
 [@sarassassin](#)



**COURTNEY BROUSSEAU**  
(he/him)

 [@courtneybrousseau](#)  
 [@cbrewsayso](#)

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Sara Cope, she/her  
@saracope on GitHub  
@sarassassin on Twitter

Courtney Brousseau, he/him  
@courtneybrousseau on GitHub  
@cbrewsayso on Twitter

**2016**

# FEDERAL SOURCE CODE POLICY

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code.gov was created as a result of the release of the Federal Source Code Policy in August of 2016.

The federal source code policy required agencies to open source at least 20% of that code and so [code.gov](#) was created as a part of that to help agencies showcase that code to other agencies as well as outside contributors.



In November of that same year, [code.gov](https://code.gov) was announced right here at GitHub universe by our former White House leader Alvand Salehi.



I am so excited to be back here with you to celebrate the 3 year anniversary of code.gov.  
When the site launch it did so with less than 50 open source project available...

An official website of the United States government [Here's how you know](#)

**code\_** ABOUT BROWSE PROJECTS FEDERAL AGENCIES DEVELOPERS SOCIAL 

# BROWSE PROJECTS

[Home > Browse Projects](#)  6560 Repositories

Search Projects... **Go**

**Filter** Sort by Data Quality ↑

**Language** ^

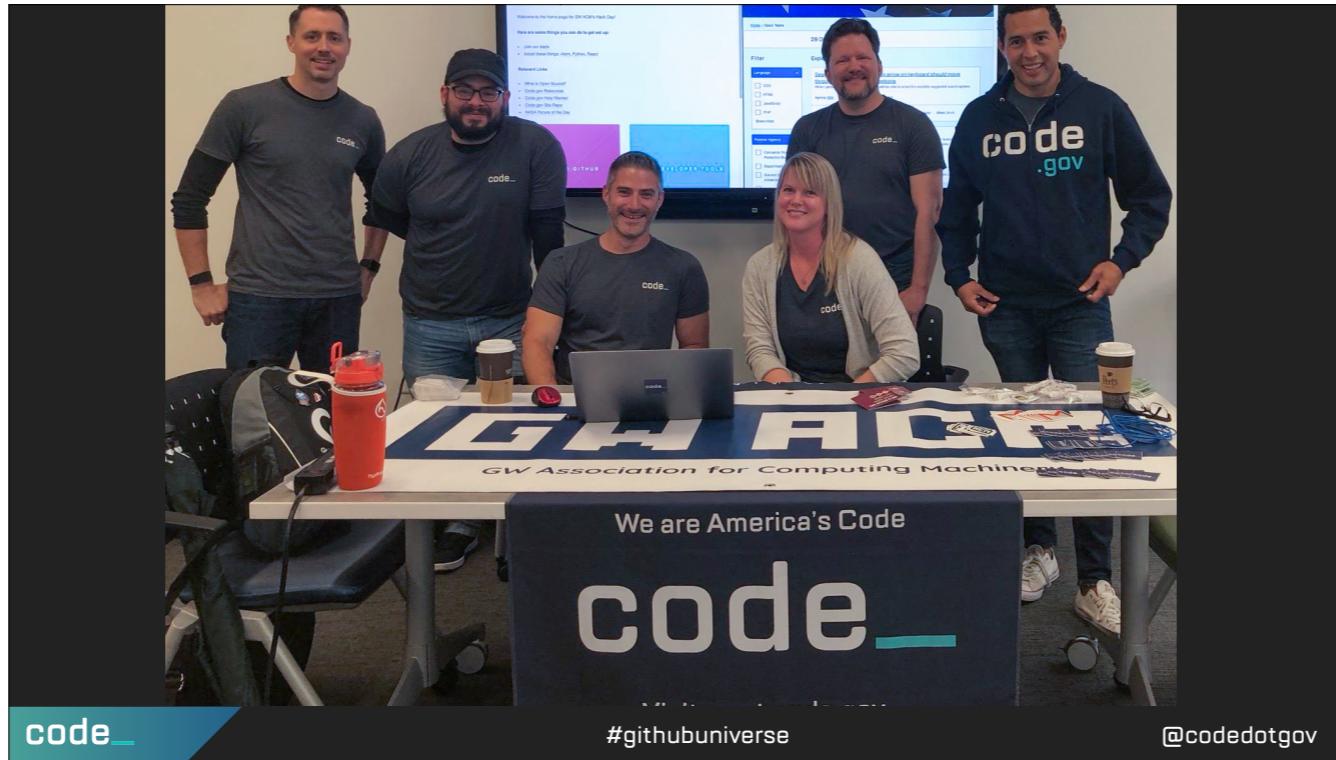
- Assembly
- C
- C#
- C++

**data-act-broker-backend** Data Quality Score 8.2

The DATA Act broker backend is a collection of services that power the DATA Act's central data submission platform. To increase access to and use of federal financial data in order to strengthen government-wide decision-making and accountability through data transparency, the broker relies on hundreds of distinct data elements to tell the story of how federal dollars are spent.

Agency: [Department of the Treasury](#) Last Updated: 6/4/2019

Now we have more than 6000, which is incredible.



I joined the code.gov team about a year ago at the end of summer in 2018. Here we are at a hackathon we co-hosted for George Washington University students. We actually did several hackathons last year and at those events we noticed some issues folks had when trying to contribute the [code.gov](#) platform.

## THE CODE.GOV PLATFORM

- Code-gov-front-end
- Code-gov-style
- Code-gov-api
- Code-gov-harvester
- Code-gov-json-schema
- ...

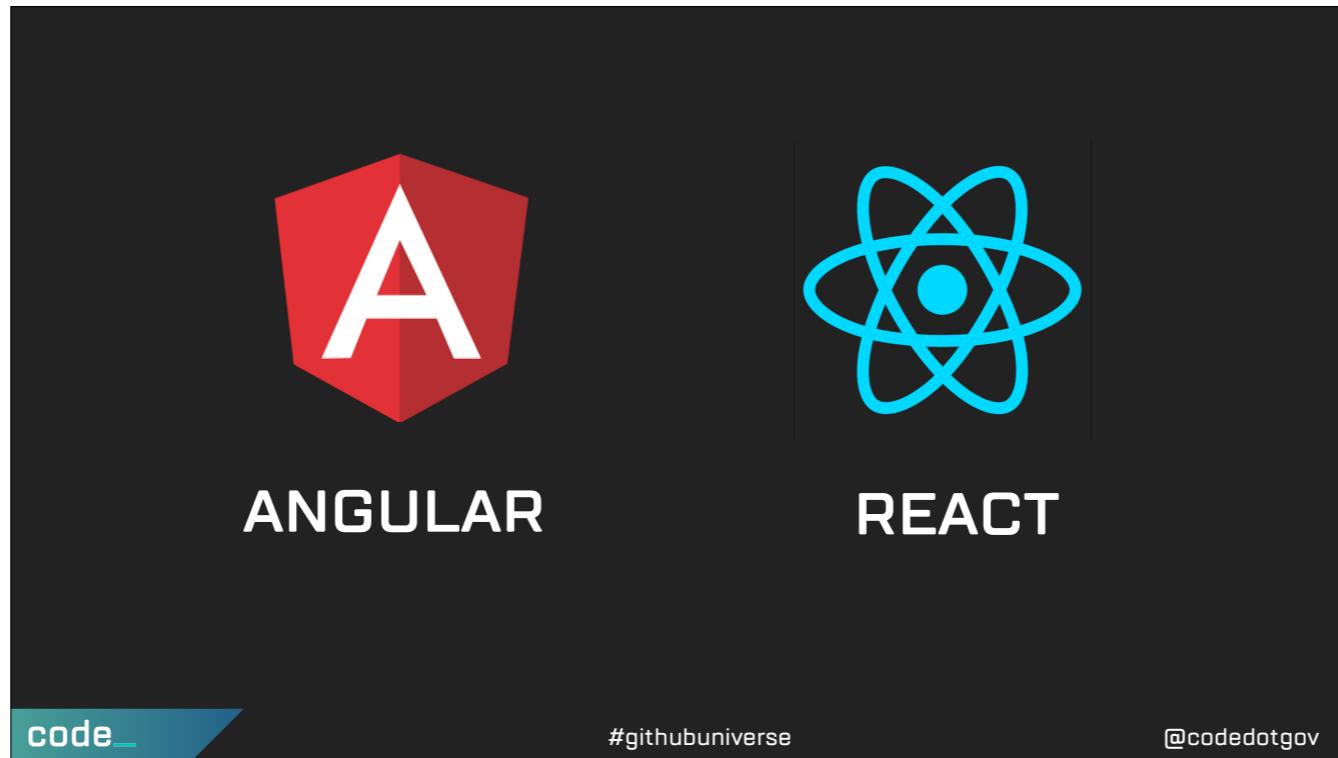
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Event participants had several issues when trying to contribute to the code.gov platform:

- Not sure where to begin
- Couldn't get the site running locally at all
- Didn't know they needed to get an API key
- Couldn't figure out where to make style changes
- Would enter issues & PR's on the wrong repo



During this same time we were working on re-platforming the site from Angular to React. So there was a lot going on for us. While we definitely talked about the issues we saw, we didn't really prioritize the contributor experience right away. In November of 2018 we beta launched code.gov on React.

The image shows a white rectangular document on a black background. In the top left corner is a blue square with the letters 'GSA'. At the top right, it says 'GSA Office of Human Resources Management'. The date 'December 22, 2018' is at the top. Below it is the subject line 'MEMORANDUM FOR GSA NON-EXCEPTED EMPLOYEES'. The 'FROM:' field lists 'ANTONIA T. HARRIS CHIEF HUMAN CAPITAL OFFICER (C)'. The 'SUBJECT:' field is 'NOTICE OF FURLough'. The body of the memo discusses the determination of non-exempt status, the potential for furlough due to lack of appropriation, and specific rules for furloughed employees regarding teleworking and equipment use. It also notes that GSA does not anticipate the furlough exceeding 30 days. At the bottom of the memo is a small note about funding bills and presidential approvals.

**35 DAYS/5 WEEKS/10% FY**

# GOVERNMENT SHUTDOWN

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The following month we were forced to stop work. This lasted for 35 days. That's 5 weeks or 10% of our year gone.

When we returned to work after those 5 weeks, we didn't do so as a full team. The 2 other engineers for code.gov, the ones who were originally there when I started, had moved on. So I went from being on an engineering to being the engineering team.



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And while I was super excited to be back to work, to say I was panicked would be a massive understatement. I didn't even work on code.gov full-time. At one point, I was working on 3 other projects in addition to this one. Plus, I didn't have a ton of experience in React before joining the team.

Alt: Troy from Community happily walking into a room with a stack of pizzas and stopping to see everything on fire.

## KEEP IT TOGETHER

- What can I do right now to make my life better tomorrow?
- Keep advocating for more team members
- Ask for help. Your sanity is more important than your ego
- Give yourself grace
- Use the power of the open source community

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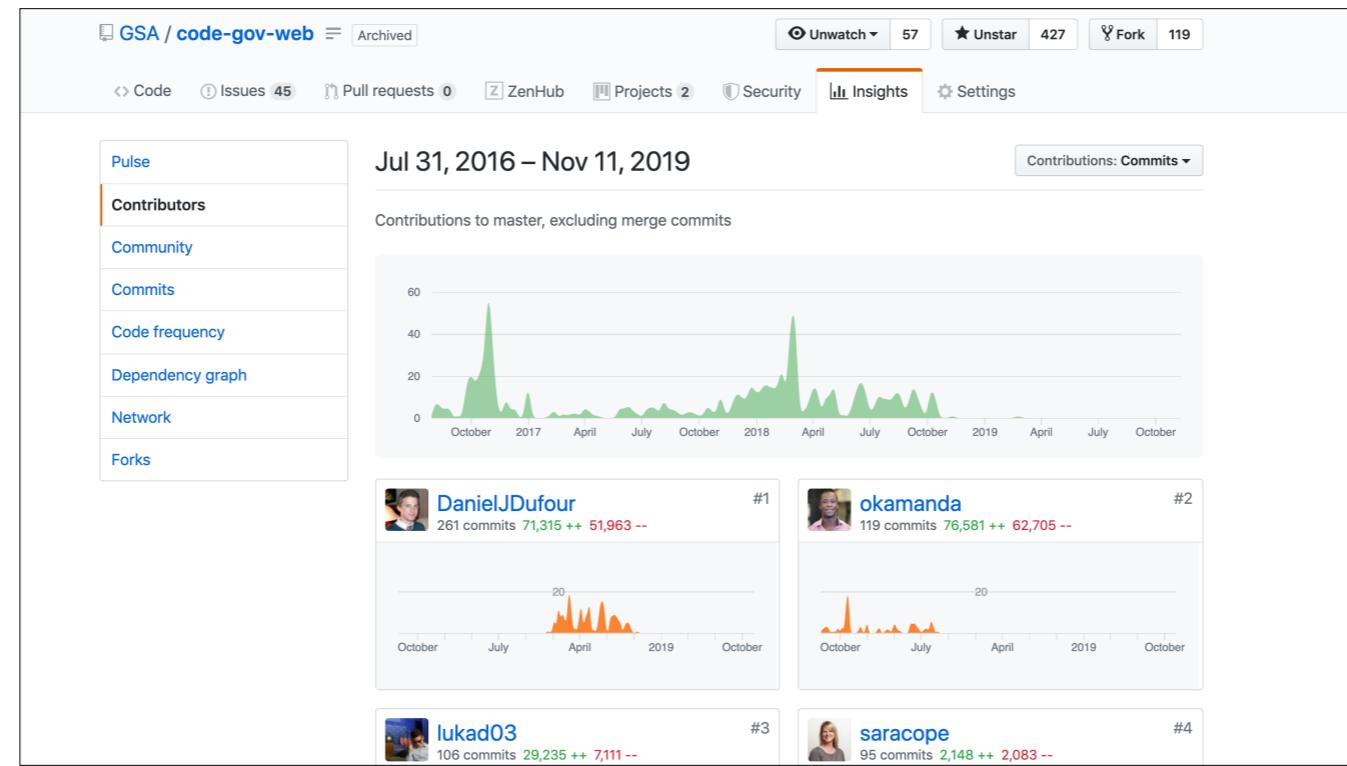
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And that's why we wanted to focus on the contributor experience so that the platform (and I) had more support.

I knew right off the bat that I had to take a step back focus on the small things. I asked myself what can I do now to create a better tomorrow? A lot of the time that meant adding test or a small automation.

I was also sure to keep advocating for additional team members and ask for help when I needed to.

As with anything, it's also important to give yourself grace. My work is open source using a version control system. Sometimes I had to remind myself that if I didn't manage to burn it all down, it could always be restored to the previous version.



I'm so thankful that code.gov is an open source project that anyone can contribute to. Because of this the 2 staff that left were still able to contribute and help out in their free time after they had left the team and their GSA access had been removed. This allowed us to more easily transition team members. Because we had an open community, they were able to rejoin our Slack as alumni and continue to be involved.

## FIRST ACTIONS

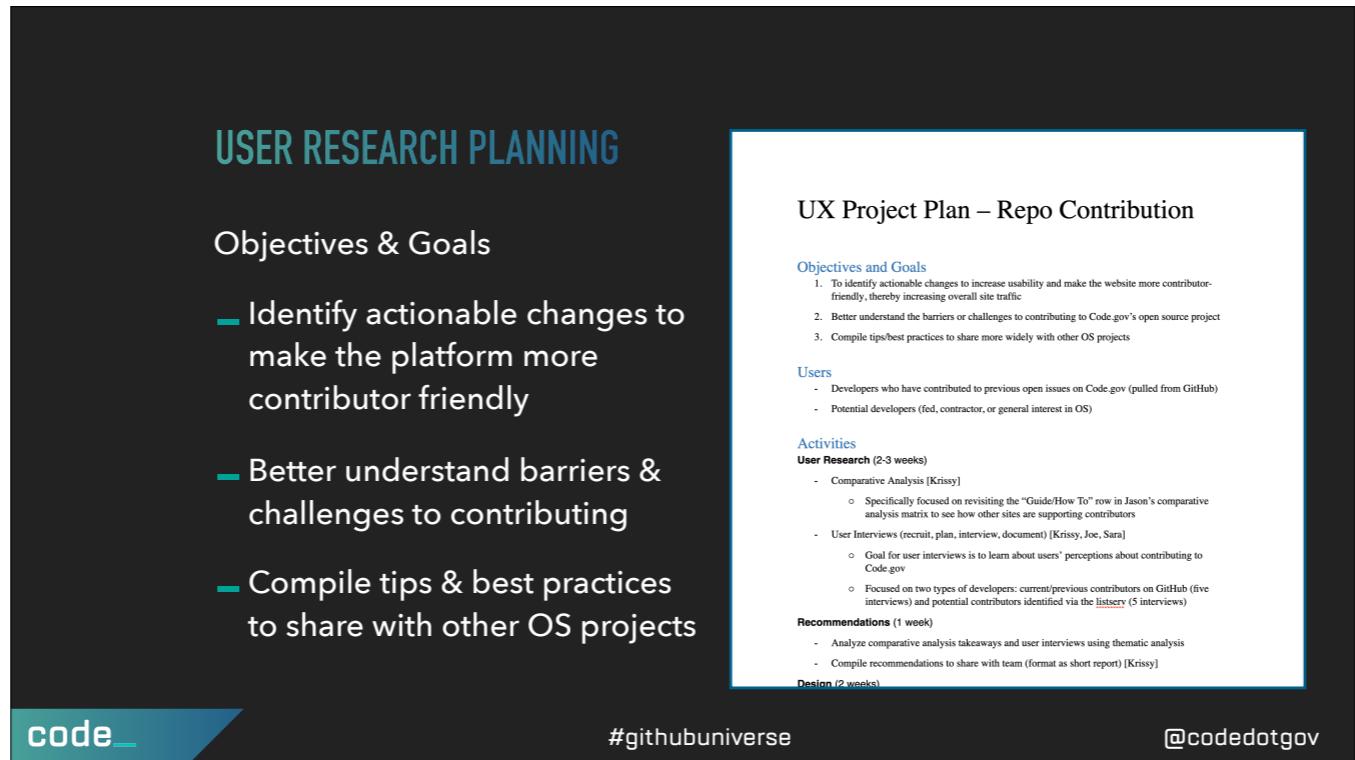
- Put a freeze on new feature development
- Address security vulnerabilities
- Add more tests, everywhere
- Kicked off our contributor experience user research

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Right away we put a freeze on new feature development to focus on feeling stable and confident with the platform. We had to make sure that if we did nothing else, we addressed any security vulnerabilities as they came up. We started to add more tests to build more trust with the platform. And then really started to focus on the contributor experience.



**USER RESEARCH PLANNING**

### Objectives & Goals

- Identify actionable changes to make the platform more contributor friendly
- Better understand barriers & challenges to contributing
- Compile tips & best practices to share with other OS projects

**UX Project Plan – Repo Contribution**

**Objectives and Goals**

- To identify actionable changes to increase usability and make the website more contributor-friendly, thereby increasing overall site traffic
- Better understand the barriers or challenges to contributing to Code.gov's open source project
- Compile tips/best practices to share more widely with other OS projects

**Users**

- Developers who have contributed to previous open issues on Code.gov (pulled from GitHub)
- Potential developers (fed, contractor, or general interest in OS)

**Activities**

**User Research (2-3 weeks)**

- Comparative Analysis [Krissey]
  - Specifically focused on revisiting the "Guide/How To" row in Jason's comparative analysis matrix to see how other sites are supporting contributors
- User Interviews (recruit, plan, interview, document) [Krissey, Joe, Sara]
  - Goal for user interviews is to learn about users' perceptions about contributing to Code.gov
  - Focused on two types of developers: current/previous contributors on GitHub (five interviews) and potential contributors identified via the Interview (5 interviews)

**Recommendations (1 week)**

- Analyze comparative analysis takeaways and user interviews using thematic analysis
- Compile recommendations to share with team (format as short report) [Krissey]

**Design (2 weeks)**

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Our UX analyst at the time, Krissey Kimura, developed a research plan to kick things off.

## USER RESEARCH INTERVIEWS

2 initial rounds of user interviews

- 14 total participants
- Artifacts: email template, participant consent form, interview guide
- Outputs: recorded interview, observer notes, lessons learned



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## USER RESEARCH INTERVIEWS

### Tools we used

- G suite: docs & sheets
- Zoom and Google Meet
- Community Listserv & Slack

### Lessons learned

- Not everyone who signed up could use google meet. Have a back up ready, like Zoom or Adobe Connect
- Set up folders for all the videos and notes ahead of time so you're not reorganizing those after the fact
- Just book 50 minutes, anything less makes things feel rushed

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## RESEARCH RECOMMENDATIONS

4 major barriers to contribution

- Inactive project/community
- Lack of quality documentation
- Non-welcoming community
- Few external contributions

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## RESEARCH FINDINGS

4 major barriers to contribution

- Inactive project/community
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**"If I see a project that hasn't been modified for a year, I don't see a point of interacting with it because it's probably not being used anymore".**

Interview  
participant

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The biggest barrier to contribution is an inactive project or community. Per one interviewee, "if I see a project hasn't been modified for a year, I don't see a point of interacting with it because it's probably not being used anymore."

## RESEARCH FINDINGS

4 major barriers to contribution

- Inactive project/community
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**“...documentation is highly valued, frequently overlooked, and a means for establishing inclusive and accessible communities”.**

**GitHub Open Source  
Survey 2017**

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According to GitHub's Open Source Survey, “documentation is highly valued, frequently overlooked, and a means for establishing inclusive and accessible communities” (2017)

## RESEARCH FINDINGS

4 major barriers to contribution

- Inactive project/community
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- Few external contributions

**“A Code of Conduct is important – some communities can be hostile”.**

Interview  
participant

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A welcoming community is an important part of open source and while negative interactions are infrequent, the public nature of open source makes them highly visible. The Code of Conduct is important – some communities can be hostile.

## RESEARCH FINDINGS

4 major barriers to contribution

- Inactive project/community
- Lack of quality documentation
- Non-welcoming community
- Few external contributions

**"I wonder about projects that don't have many contributors. Are they not welcoming to outsiders? Will my contribution be valued?"**

Interview  
participant

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Several of the interviewees noted that if they see a project with few external contributions they are less likely to contribute themselves because, similar to an inactive project/community, they are unsure if their contributions will be valued or merged.

## RESEARCH RECOMMENDATIONS

### Areas of focus

- Documentation
- Transparency
- Community engagement
- Repo interaction

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Based on our research findings, we developed several areas focus our efforts in creating a better user experience.

## DOCUMENTATION

- Set a bare minimum for standardization of documentation across Code.gov repos, then make sure each repo meets these standards (and update as needed)
- Create a repo template with starter docs
- Update Issue tags for consistency
- Better explain how the platform repos are connected and how to use each one

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## TRANSPARENCY

- Add badges for testing and continuous integration
- Publish release notes to make staying updated easier
- Post in Slack channel and to Listserv to announce releases
- Keep the product roadmap published and updated
- Publish more updates to the blog on the work we're doing

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## COMMUNITY ENGAGEMENT

- Explicitly thank contributors in release notes
- Published our mission and vision to the home page to help show people the impact of contributions
- Acknowledge Issues and Pull Requests within 24hrs
- Continue to participate in events like hackathons and possibly Google Summer of Code

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## REPO INTERACTION

- Use/update Issue and Pull Request templates
- Add automated testing to each repo
- Remove/consolidate/archive repos that are no longer used
- Update to a new Code of Conduct
- Get to green for each repos Community Profile in GitHub

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## DEFINE & TRACK ENGAGEMENT METRICS

### Current metrics

- Issues
- Pull requests
- Watchers
- Stars
- Forks
- Contributors

### New metrics

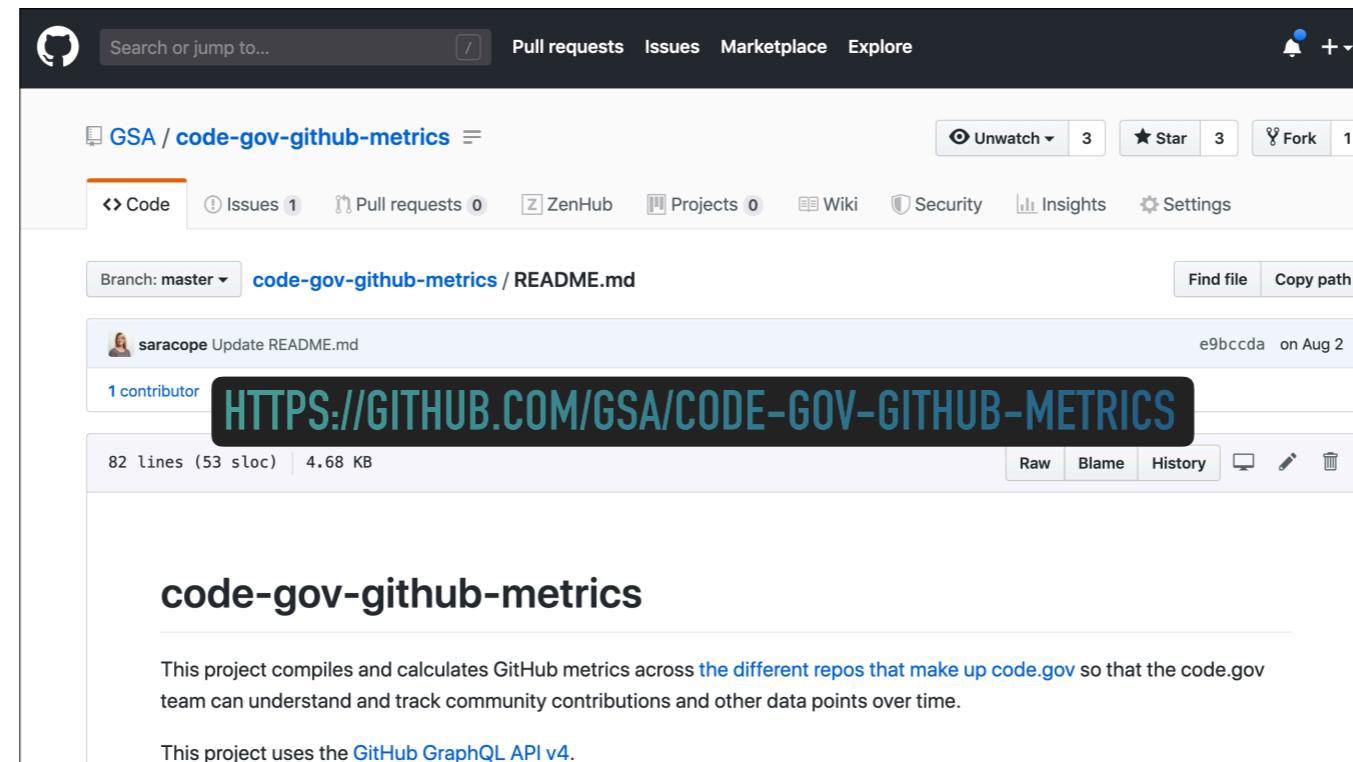
- Internal vs external users
- Old issues open > 120 days
- Average issue & PR open time
- Stale issues that haven't had activity in > 14 days
- % Issue closed by PR

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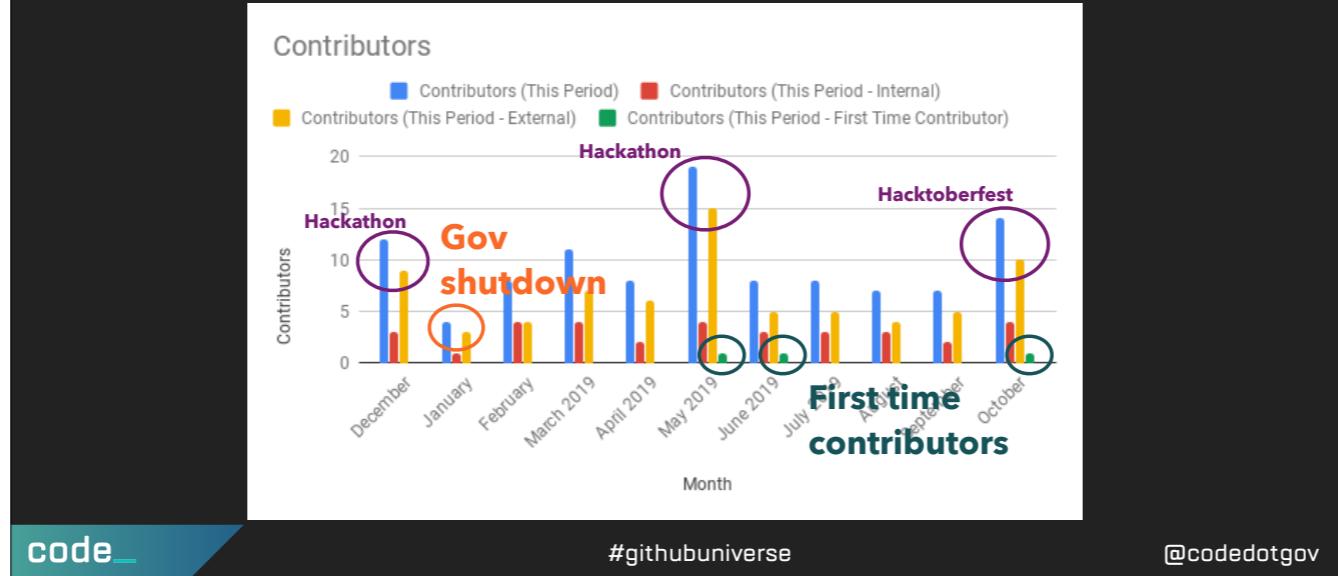
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For a while we'd been tracking the basic engagement stats. Issues, PR's, stars, forks. After diving a bit deeper into what was happening to our repos we decided to expand these. So we started tracking internal team vs. external contributor issues and pull requests. We started looking at how long issues have been open and if they've gone stale. How long is it taking us to close issues and PR's.



We created a tool that uses the GitHub GraphQL API to extract these metrics for us and open sourced the project on GitHub. It has a command line interface and creates a .csv file which we then import to a spreadsheet.  
<https://github.com/GSA/code-github-metrics>

## OBSERVATIONS



So after gathering data and taking a look at it we noticed a few things.

1. Contributors are active around events we host & promote.
2. Contributors are active when we are.
3. We still need to do better for first time contributors

## FOLLOW-UP USER INTERVIEWS

- Small scale, 3 users
- Once a month
- Use the community to find participants
- 50 minute interview with 1 easy opener, 3 tasks to complete, 1 follow-on question
- Focus on major blockers
- 1 page debrief doc, spend less than 30 minutes to create it
- Spend no more than 1 day on the entire process
- Immediately add Issues to the backlog

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We've started doing follow-up user interviews at a smaller, more frequent scale to test that the changes we've made so far are making a difference. Our focus with the interviews is finding and clearing user blockers. Our first experiment with this was in September of this year and we plan on doing continuously interview users once a month starting in 2020.

# WHAT'S NEXT FOR CODE.GOV

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## WHAT'S NEXT

- Continue to publish our research and changes on our blog
- Launching an Open Source Playbook and Toolkit for federal open source maintainers
- Continue to research and open source our findings

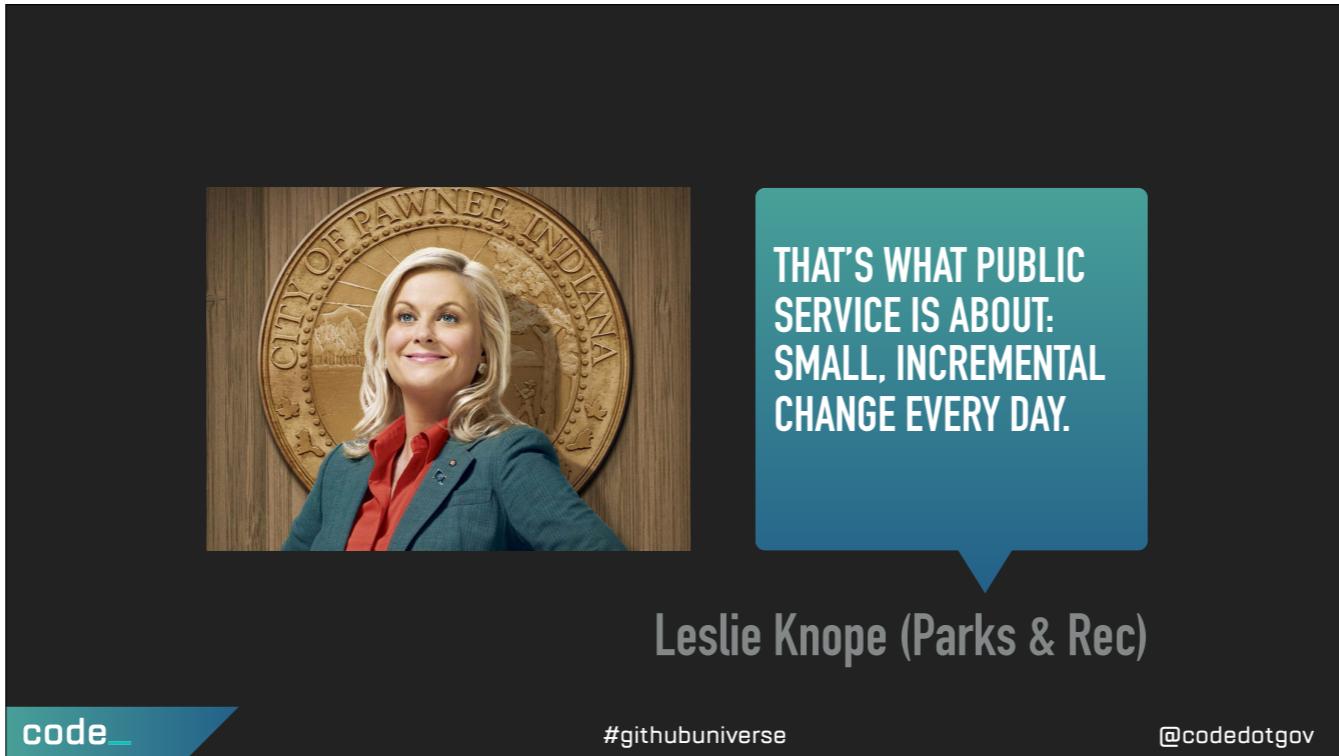
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We're going to continue to research the contributor experience and publish our findings and updates to the [code.gov](#) blog.

Early next year, we'll be working with other federal open source maintainers to create a Federal Open Source playbook and toolkit with the goal of encouraging other agencies to follow best practices and also make the 6000 repos that are listed on code.gov easier to contribute to.



At the end of the day, it has been really hard working on such an important project without a huge engineering team. But I'm so glad to have the support of the open source community to keep it moving forward. As a team we'll continue to focus on small incremental change every day because that's what public service is all about.



We work in public service because we get the chance to work hard at work worth doing.  
So I thank those people who've walked with me on this journey. And I thank you for your time today.