

## Background

In scientific domains, workflows are the blueprints for complex computational processes for data processing and analysis.

The WfCommons project hosts a repository of production workflow instances, WfInstances. These instances support a wide range of research, development, and education activities.

The WfInstances Browser is an accompanying web application that lets users easily browse, select, sort, download, simulate, visualize workflow instances in WfCommons repositories.

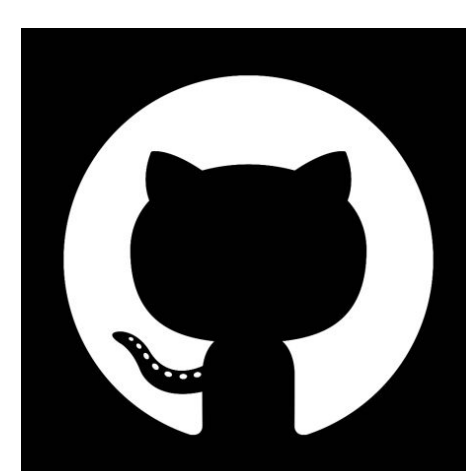
## Objectives

- Add new features to the existing WfInstances Browser implementation to increase usability
- Update the WfInstances GitHub repository to dynamically display WfInstances Browser usage metrics
- Add user questionnaires to gather and archive feedback
- Improve the way in which the WfInstances Browser acquires workflow instances from the WfInstances repository

## Methodology

### Project Management

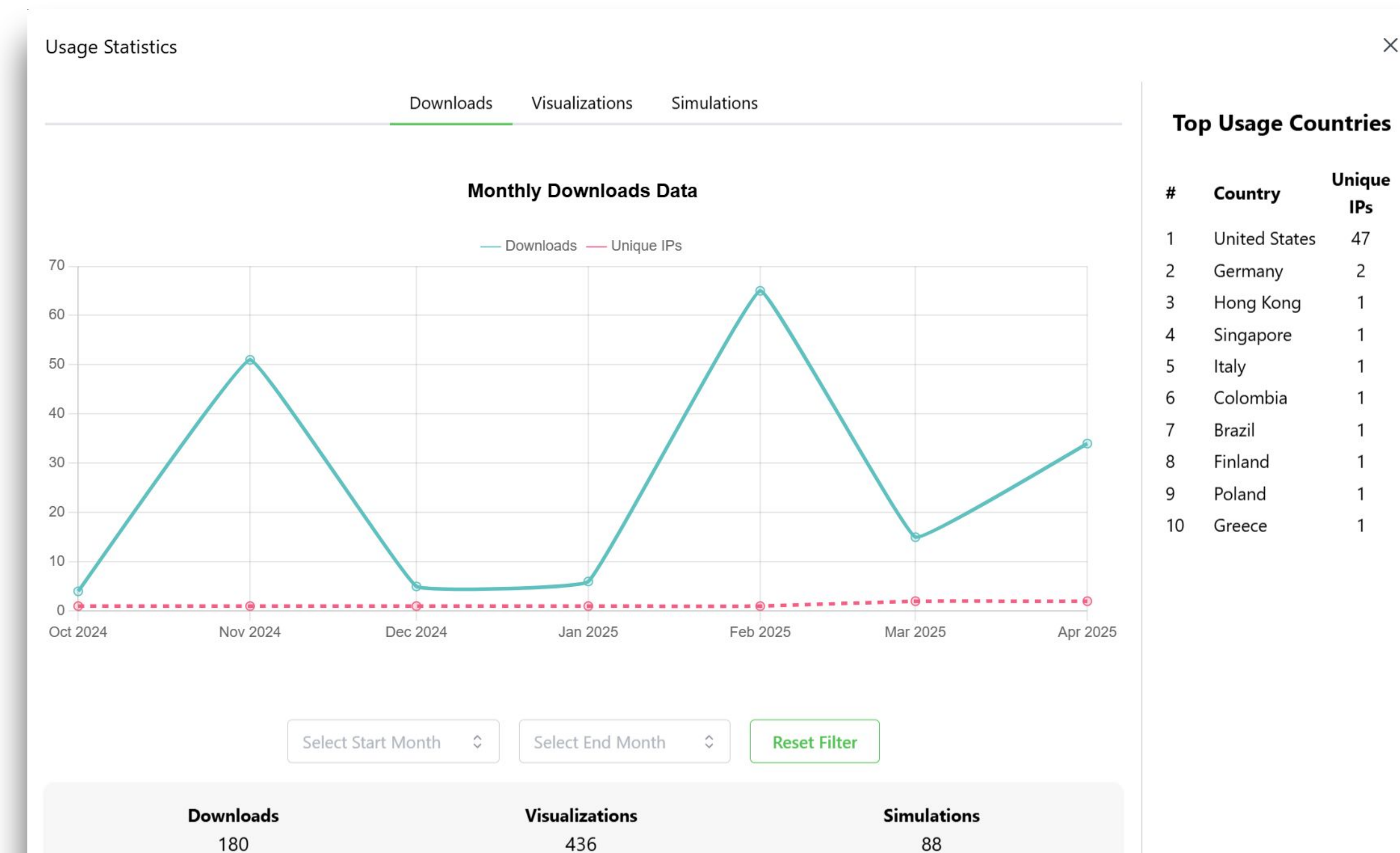
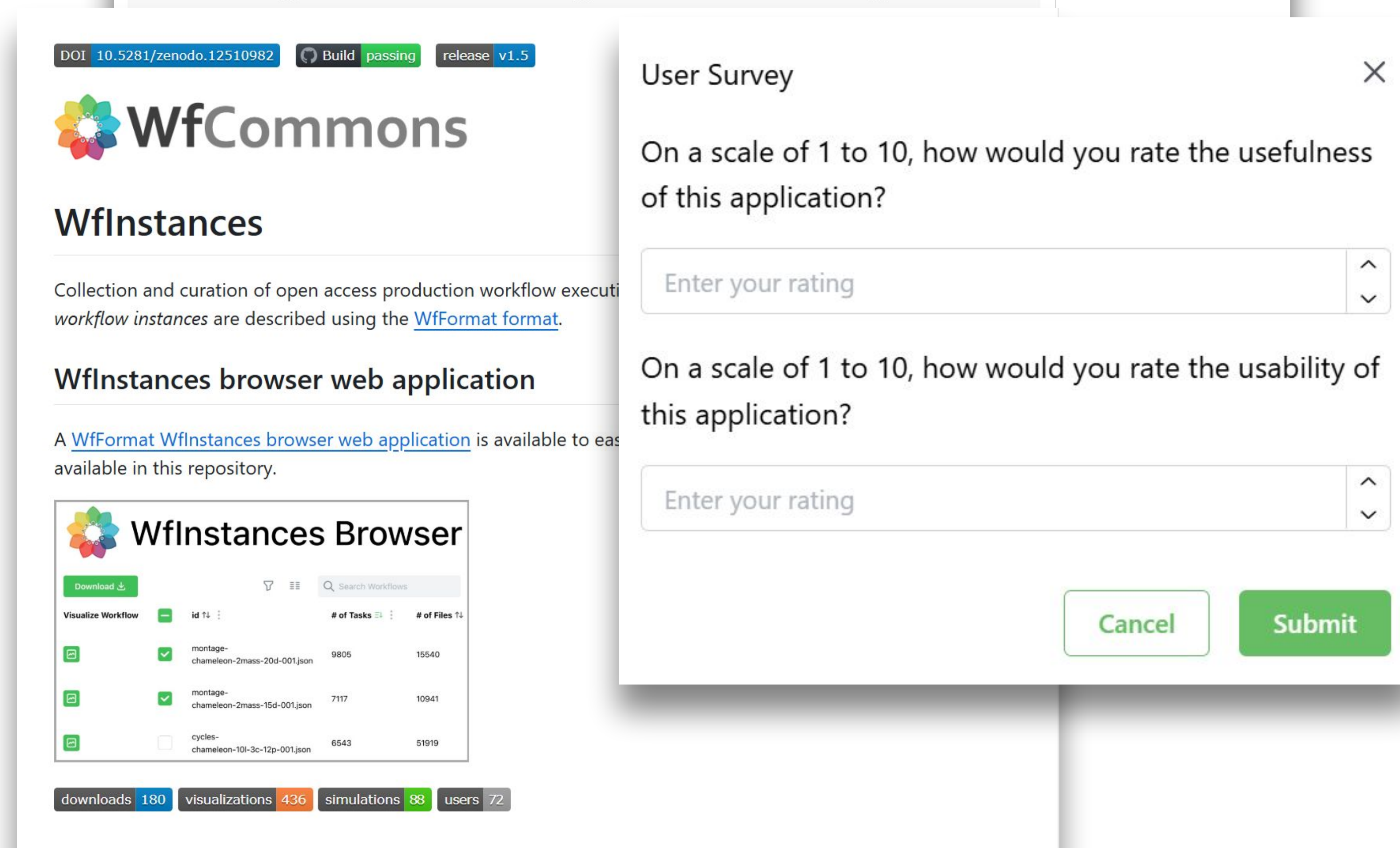
- *Weekly Meetings* with team and sponsor to ensure best practices and following proper next steps
- *Agile Project Management* using GitHub projects as Kanban Board for Issue Driven Project Management (IDPM)
- *Assigning Roles* at project kickoff to determine members' responsibilities for evenly distributed work throughout project



## Accomplishments

### Implementation of New Features in the WfInstances Browser

- Added a modal that shows timeline and aggregate usage reports for downloads, simulations, and visualizations
- Date ranges can be customized for filtering usage data
- Users' countries of origin are displayed in a sidebar using IP geolocation tracking
- Users are occasionally prompted with questionnaires about usability and usefulness of the app
- Workflow instances are now acquired using the git Python package instead of the GitHub REST API, for higher performance
- A GitHub action was added to the WfInstances repository to display WfInstances Browser usage data

DOI: 10.5281/zenodo.12510982 Build: passing release: v1.5

**WfCommons**

**WfInstances**

Collection and curation of open access production workflow execution workflow instances are described using the [WfFormat format](#).

**WfInstances browser web application**

A [WfFormat WfInstances browser web application](#) is available to easily access workflow instances available in this repository.

**WfInstances Browser**

Visual Workflow

Workflow	# of Tasks	# of Files
mortgage-channel-2004-001.json	9805	15540
mortgage-channel-2004-154-001.json	7107	10941
cycles-channel-100-3c-100-001.json	6543	91919

downloads 180 visualizations 436 simulations 88 users 72

**User Survey**

On a scale of 1 to 10, how would you rate the usefulness of this application?

Enter your rating

On a scale of 1 to 10, how would you rate the usability of this application?

Enter your rating

Cancel Submit

## Challenges

- Gaining familiarity with working with Docker deployments and backend development
  - Ensuring that the data flow between the frontend and the backend is both correct and efficient
- Learning to work with the backend REST API, especially for
  - Routing the backend data all the way to the modal component in the frontend
  - Implementing IPInfo geolocation tracking

## Takeaways

- Increased proficiency using Python for backend and TypeScript for frontend development
- First hands-on experience with developing a GitHub action
- Gained more knowledge about software development in general using many different technologies

## Outcome

All deployed in production at: <https://wfinstances.ics.hawaii.edu>

## Technologies Used



## Contact

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