Software Citation Tools

Who are We?

Team ForCite: Eric Lee, Rob Lowe, Sam Mosher, and Colin O'Neill

Faculty advisor: Dr. Donald Boyd

Sponsor: Abigail Cabunoc Mayes

and the Mozilla Science Lab

Problem

- Software in research
  - Heavily used
  - Rarely cited
  - Cited inconsistently
- Low adoption of Force 11 principals

Mission

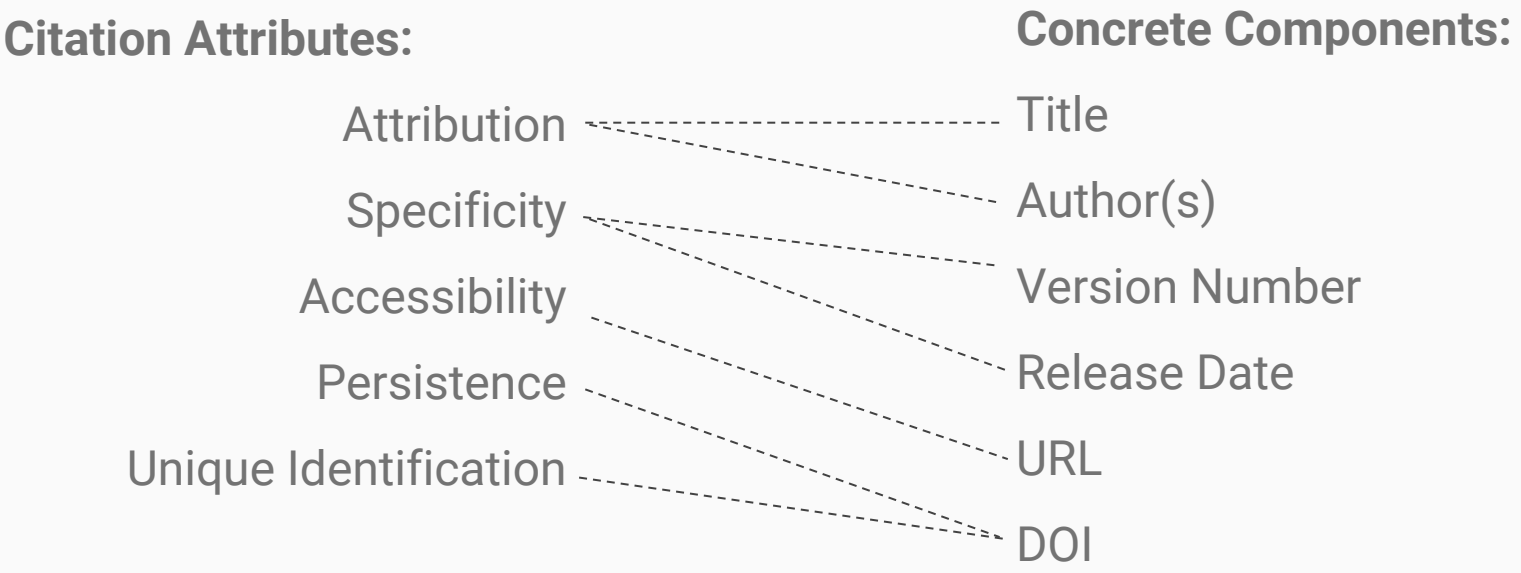
- Get more credit for research code
- Make citing software easier for researchers and academics
- Build a suite of tools to generate software citations
- Develop a community around the tools
  - Gather ideas from the stakeholders
  - Develop with community collaborators
  - Ensure the longevity of the project

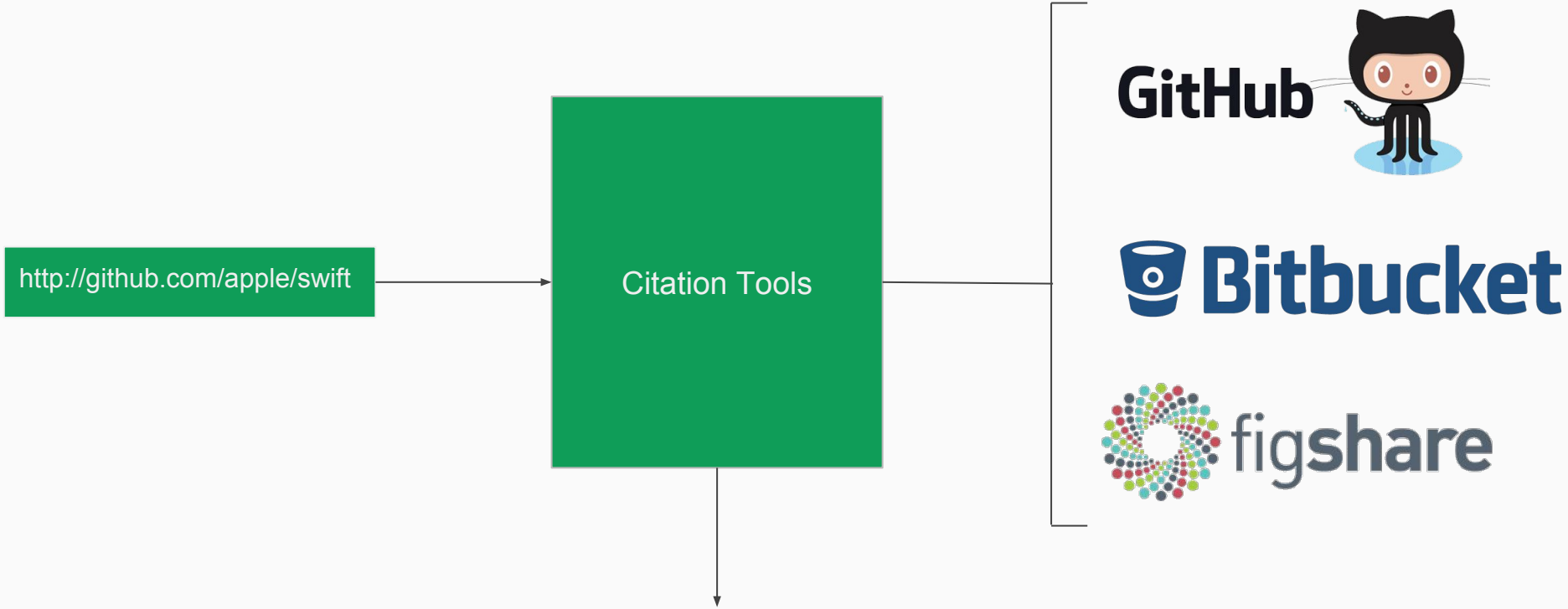
Plan

- Core Package
  - Pulls metadata from a source
  - Uses standardized metadata to produce a citation in a selected format
  - Modular design, allowing for adding more sources and output formats
- Tool Suite
  - Utilizing the Core Package
  - Command Line Tool
  - Browser Plugin
  - Web Application

Design & Architecture

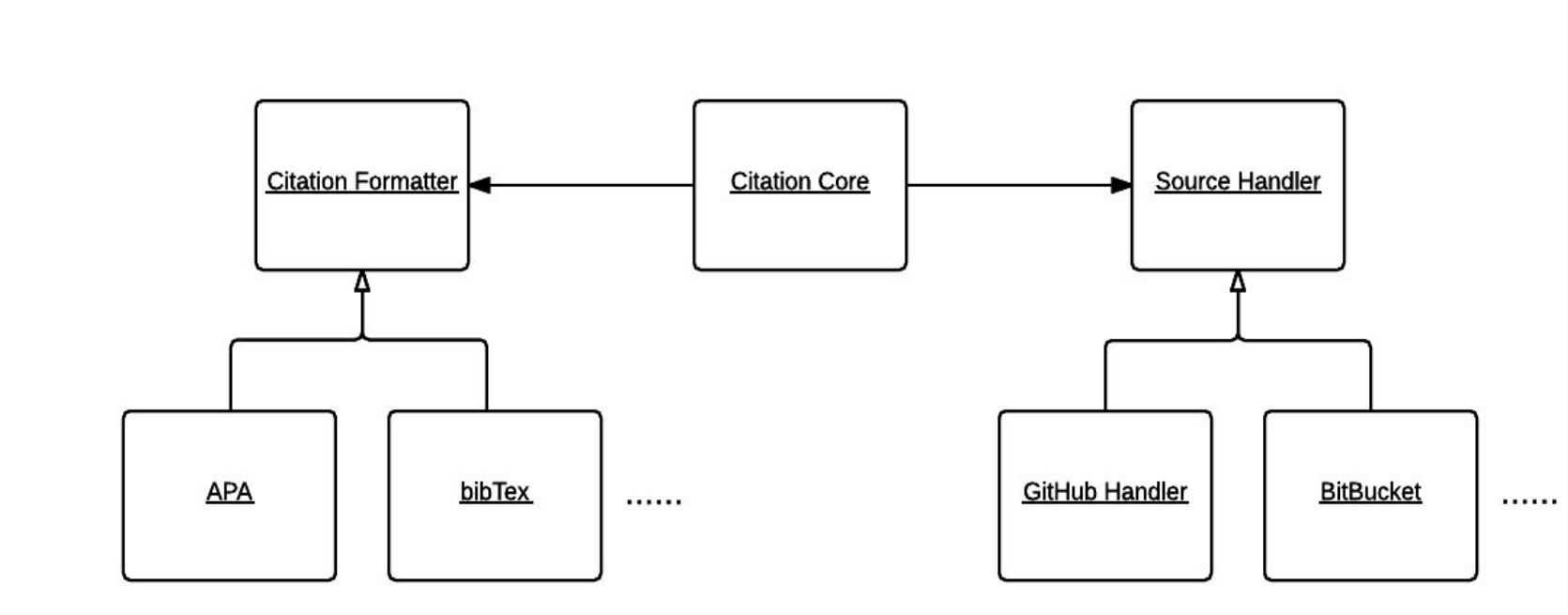
What is a Software Citation?





Lattner, C., Gribenko, D. & Gregor, D. (2016). "swift". Version: Swift 3.0.1 Preview 3. Retrieved From: https://swift.org/

CitationCore



Technologies Used

- ES6
- NodeJS
- Browserify
- JSDoc

browserify

Community Engagement

Requirements Elicitation

- Use discussion issues on GitHub
- Use Mozilla Science Lab to gain awareness
- Conduct direct interviews
- Send out status newsletters

MozFest 2016

- Spoke with a great number of potential users and stakeholders
  - Gained a great deal of domain knowledge
- Attended sessions on related topics
- Collected emails to start a newsletter
- Gave a presentation to interested parties

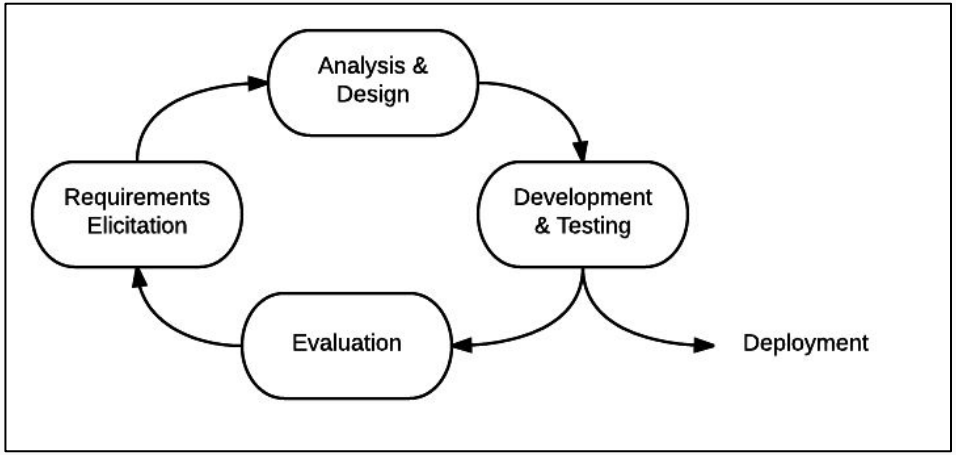
What We Learned

- Why Citation is important
- Commonly used source repositories
  - GitHub
  - BitBucket
  - FigShare
- Commonly used tools
  - bibTeX

Process

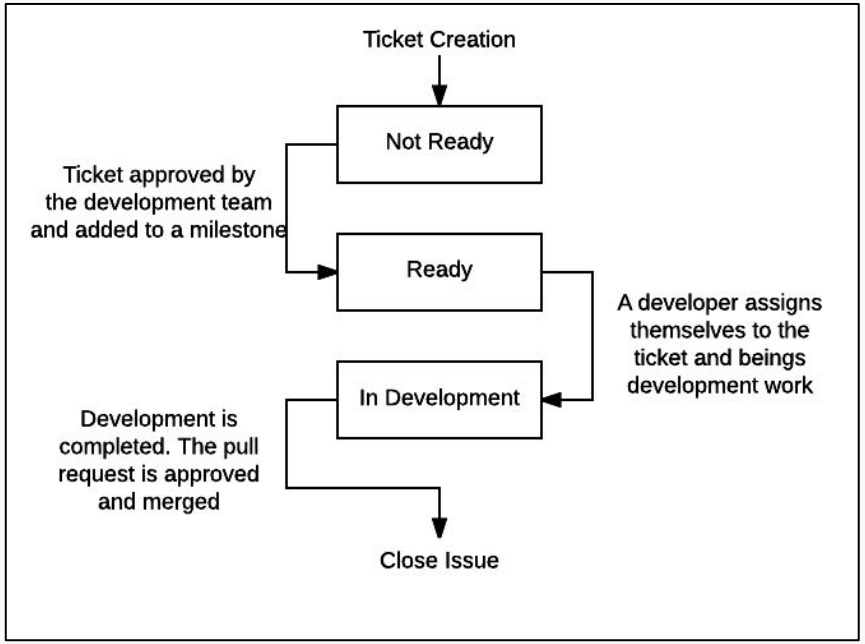
Process

- Incremental, iterative development
- Evolutionary prototyping
- Allow outside contributors to contribute at any point



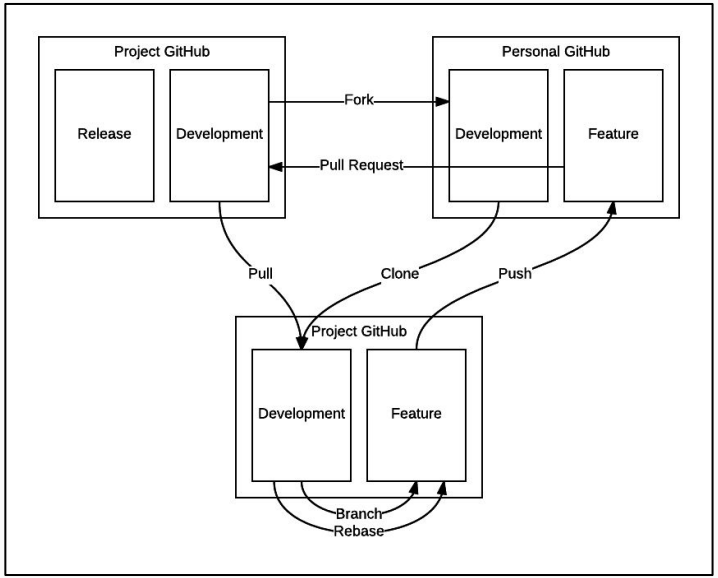
Ticketing

- Tracked via GitHub Issues
- Anyone can create
- Team assigns Milestones
- Assigned to developer
- Closed when code is merged



Development Process

- Developers claim tickets
  - Team - priority based
  - External contributors - desire based
- Pull request issued
- Static white box testing via Code Reviews
- Two team members must approve
- Pull request accepted
- Dynamic black box testing

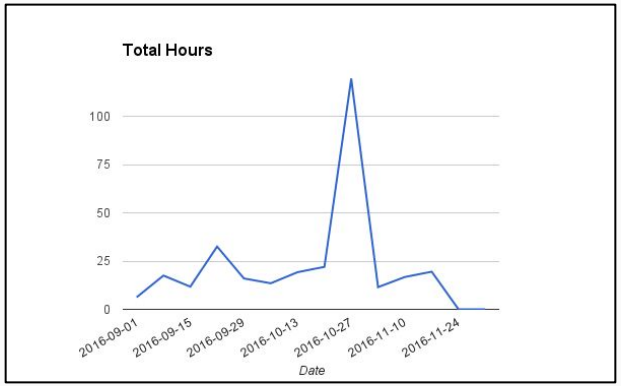


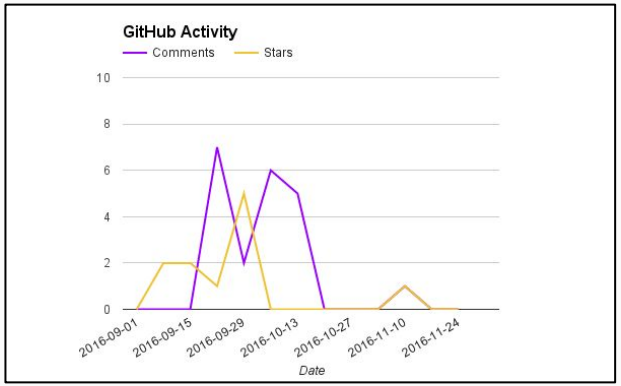
Metrics

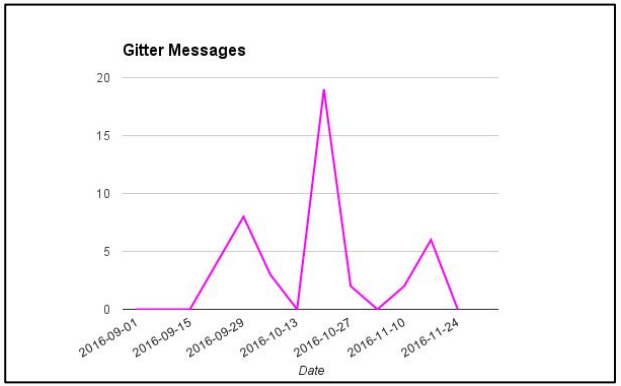
Chosen Metrics

- Wanted to track work completed, time spent, and community involvement
- Metrics to track work completed:
  - Issues closed
- Metrics to track time spent on the work
  - Hours per person per week
  - Total team hours per week
- Metrics to track community involvement
  - Activity on the Gitter chat group
  - Community activity on GitHub (stars, comments, opened issues, etc).

Metrics Overview



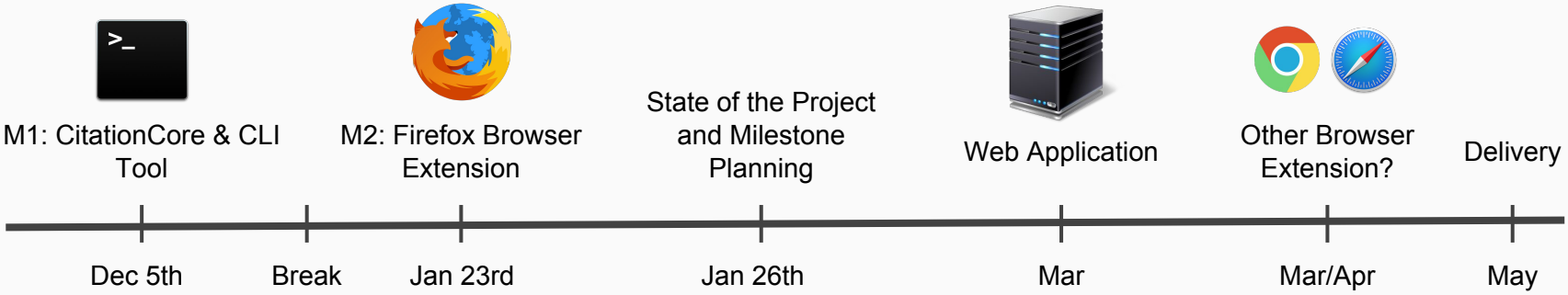




Demo

Future Plans

Timeline


M1: CitationCore & CLI Tool
M2: Firefox Browser Extension
State of the Project and Milestone Planning
Web Application
Other Browser Extension?
Delivery
Dec 5th
Break
Jan 23rd
Jan 26th
Mar
Mar/Apr
May

Going Forward

- Add unit tests
  - Mocha JavaScript testing framework
- Automate collection of metrics
  - GitHub API
- Switch metrics from Gitter to other areas of social media
- Break tool suite into separate repos

Final Questions, Comments, & Thoughts

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GitHub repository: git.io/vXkMW