MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Improve Firefox's Reader View

The Capstone Experience

Team Mozilla

Noel Lefevre
Jintao Hu
Chad Burnham
Tyler Kabaker
Emily Michaels
Steve Hagopian

Department of Computer Science and Engineering
Michigan State University

Spring 2022

From Students…
…to Professionals

Functional Specifications

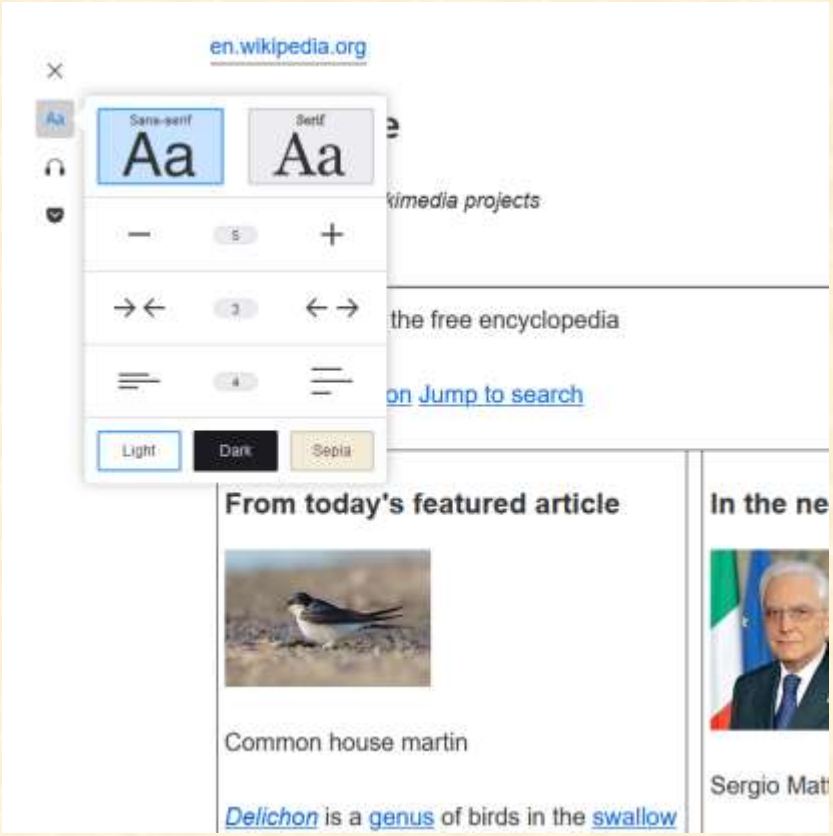
- Guarantee simple and streamlined access to the internet
- Fix bugs and other issues with Reader Mode
- Implementation must be intuitive and easily accessible
- Manually fix frequently used websites

Design Specifications

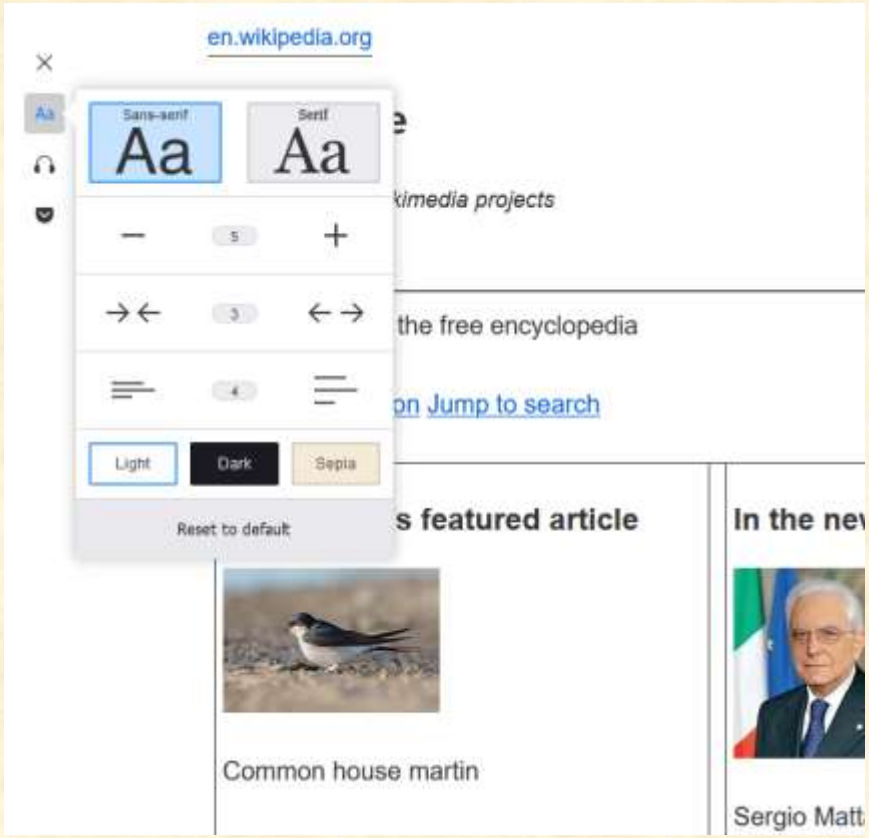
- Features that will be improved upon or added:
  - Quality of life improvements
    - Add shortcuts and buttons
    - Improve user experience
  - Cross-browser compatibility
    - URL drag between browsers
  - Document styling
    - Auto reset original formatting
  - Page formatting
    - Formatting pictures
    - Adding border

Screen Mockup: User Experience

Before:

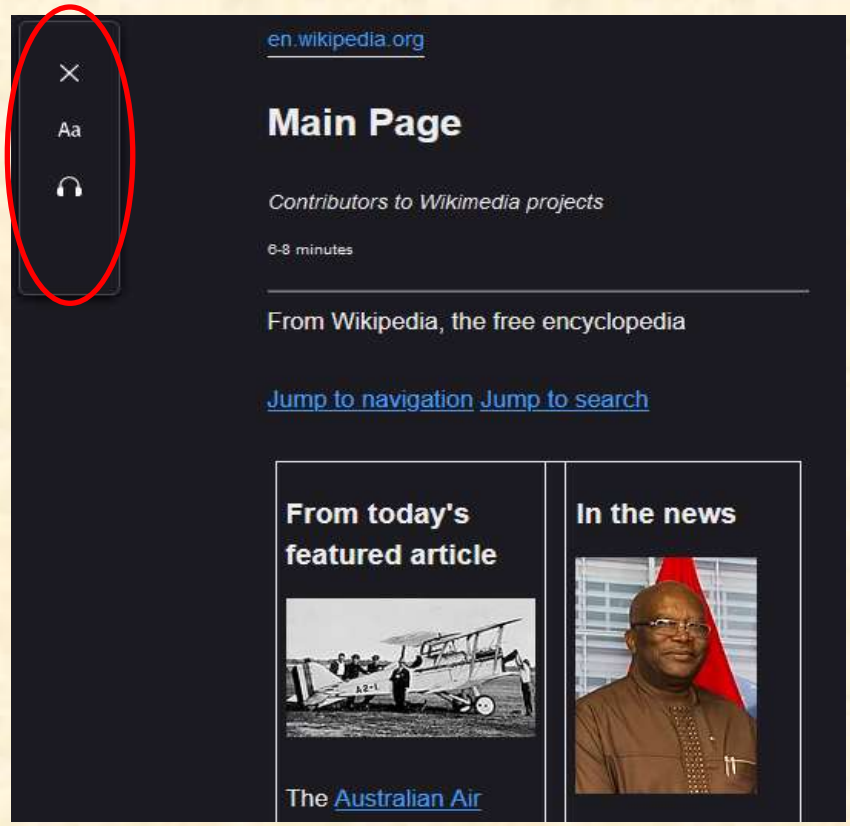


After:

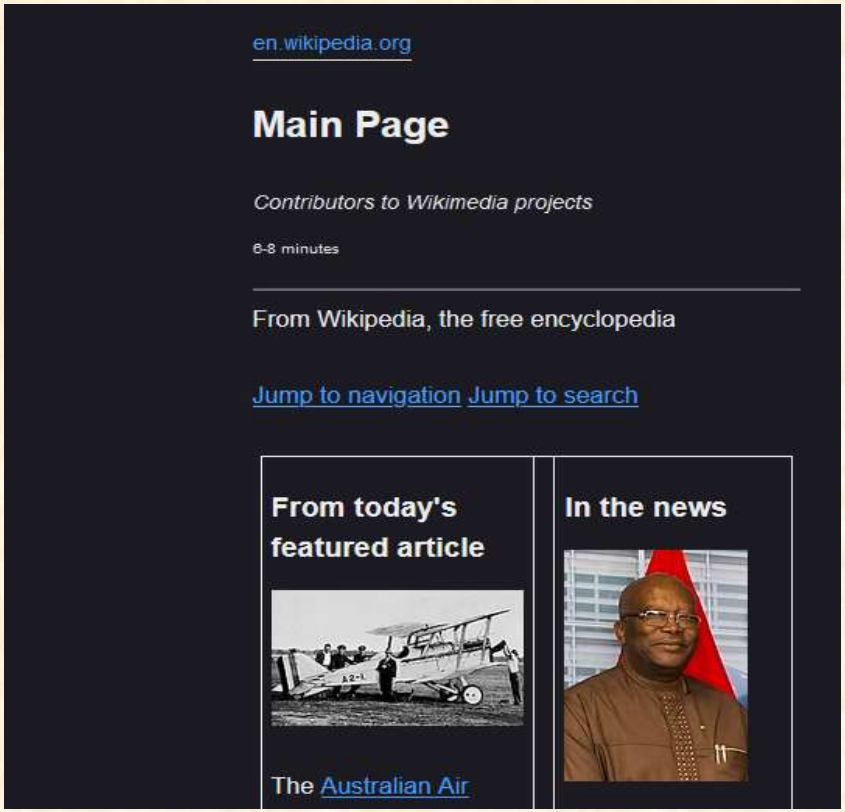


Screen Mockup: User Interface

Before:

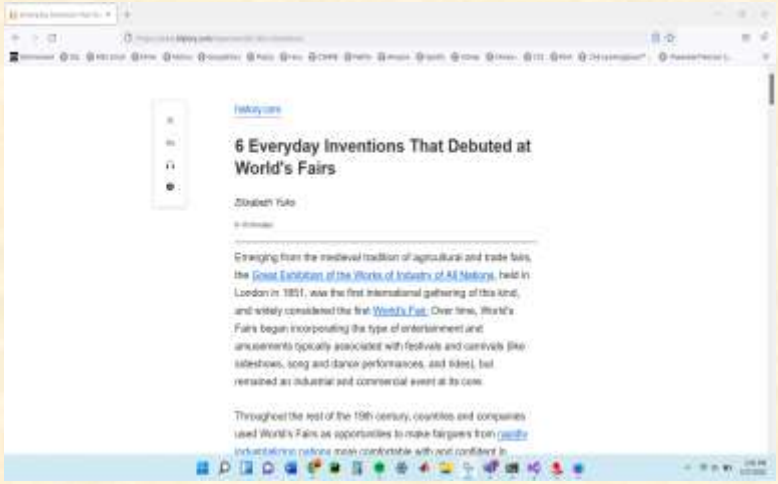


After:

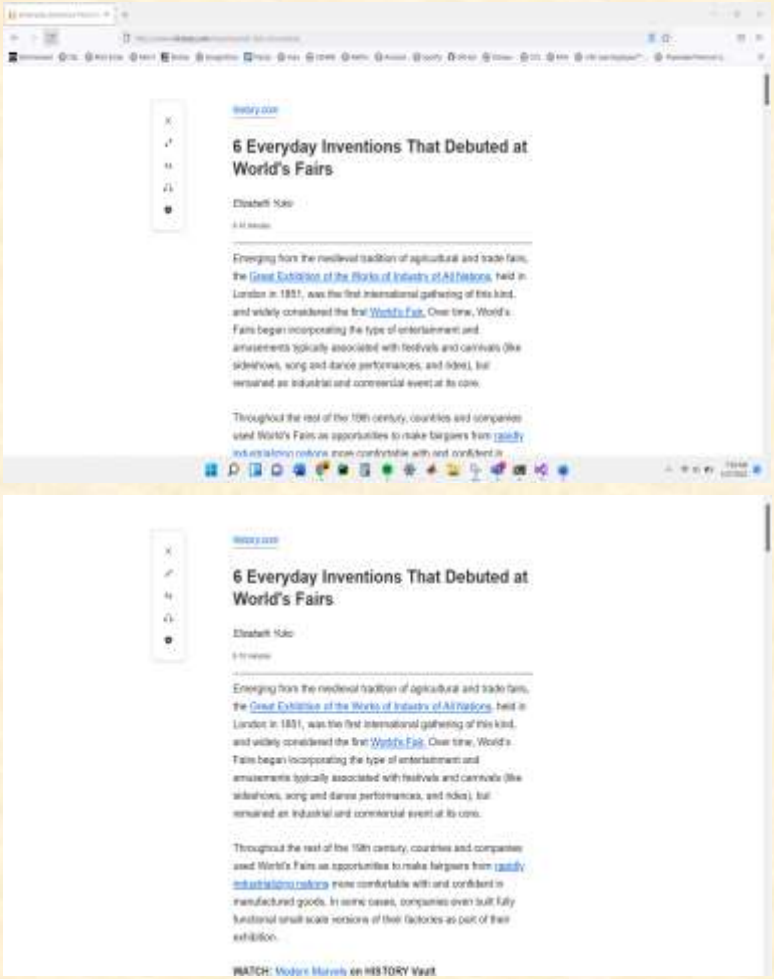


Screen Mockup: User Interface

Before:

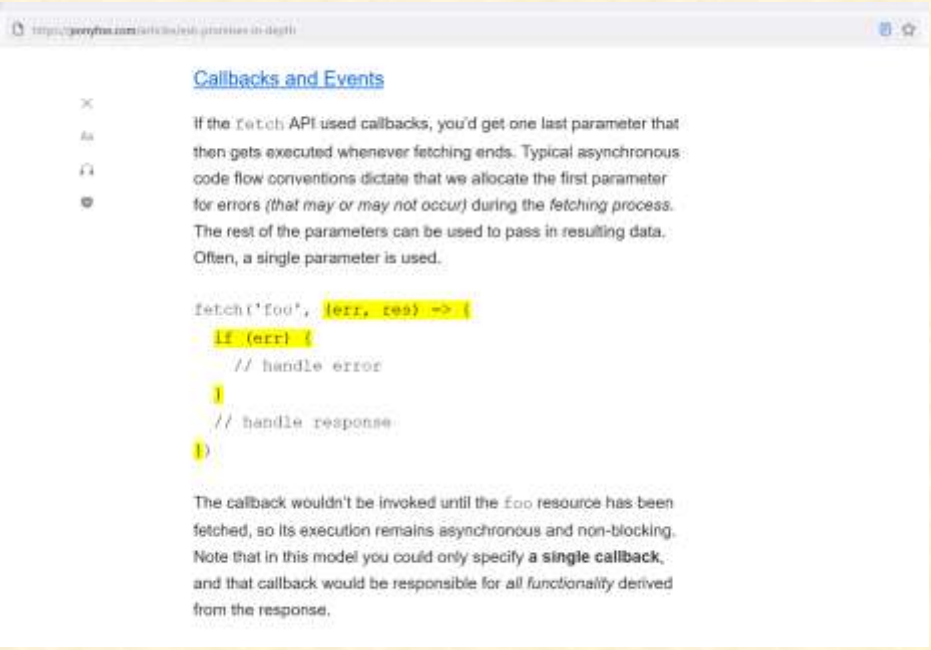


After:



Screen Mockup: User Interface

Before:



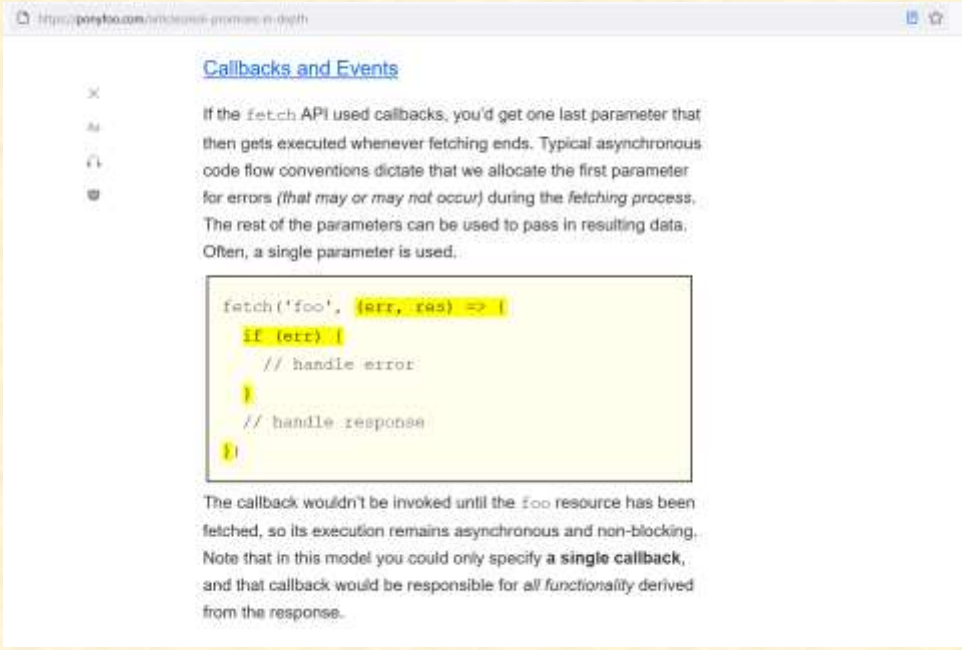
Callbacks and Events

If the `fetch` API used callbacks, you'd get one last parameter that then gets executed whenever fetching ends. Typical asynchronous code flow conventions dictate that we allocate the first parameter for errors *(that may or may not occur)* during the *fetching process*. The rest of the parameters can be used to pass in resulting data. Often, a single parameter is used.

```
fetch('foo', (err, res) => {
  if (err) {
    // handle error
  }
  // handle response
})
```

The callback wouldn't be invoked until the `foo` resource has been fetched, so its execution remains asynchronous and non-blocking. Note that in this model you could only specify **a single callback**, and that callback would be responsible for *all functionality* derived from the response.

After:



Callbacks and Events

If the `fetch` API used callbacks, you'd get one last parameter that then gets executed whenever fetching ends. Typical asynchronous code flow conventions dictate that we allocate the first parameter for errors *(that may or may not occur)* during the *fetching process*. The rest of the parameters can be used to pass in resulting data. Often, a single parameter is used.

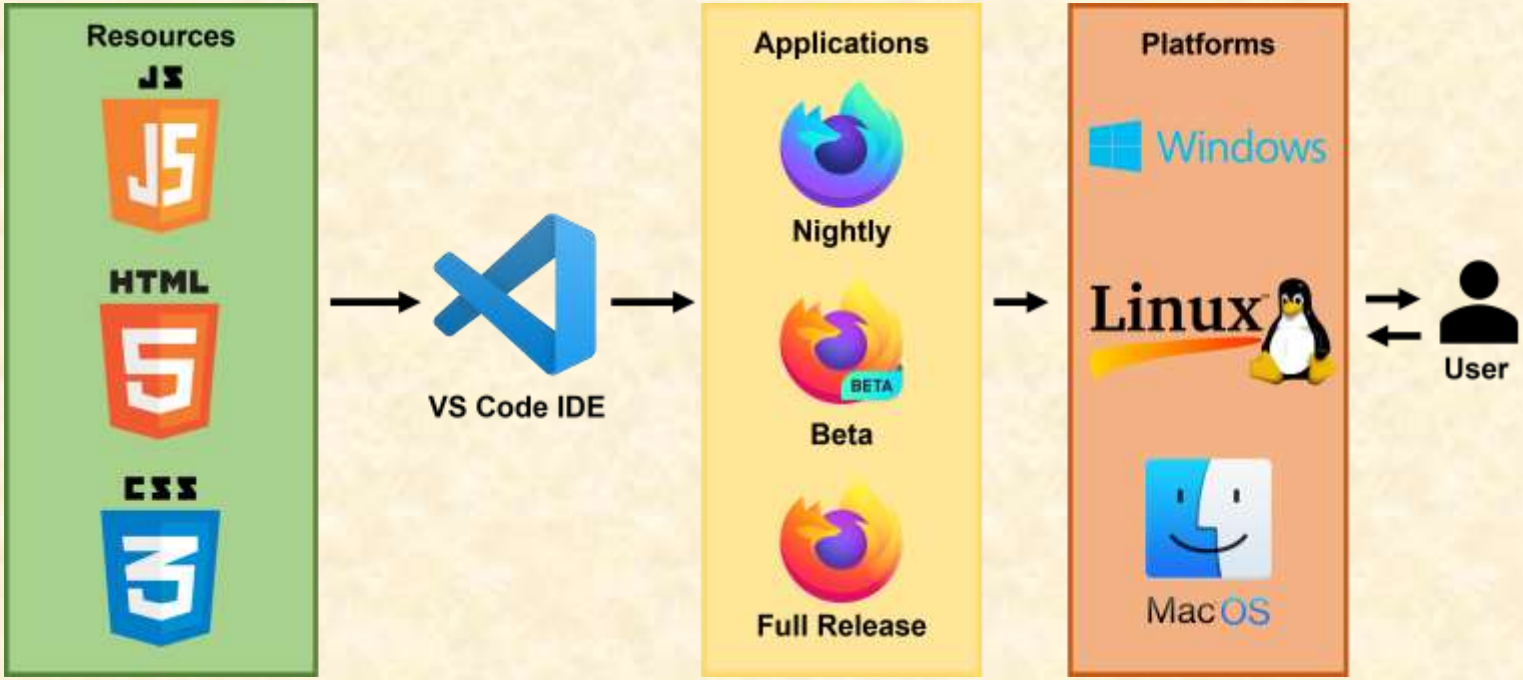
```
fetch('foo', (err, res) => {
  if (err) {
    // handle error
  }
  // handle response
})
```

The callback wouldn't be invoked until the `foo` resource has been fetched, so its execution remains asynchronous and non-blocking. Note that in this model you could only specify **a single callback**, and that callback would be responsible for *all functionality* derived from the response.

Technical Specifications

- Platform: Windows, Mac, and Linux
- Programming: HTML, CSS, JavaScript
- Codebase: Mercurial, Git
- Report and Track: Bugzilla
- Review: Phabricator

System Architecture



System Components

- Hardware Platforms
  - Windows, Mac, Linux
- Software Platforms / Technologies
  - HTML, CSS, JavaScript
  - Visual Studio Code
  - Bugzilla
  - Mercurial, Git
  - Search Fox, Browser Toolbox
  - Phabricator

Risks

- Risk 1: Accidentally Implementing New Bugs
  - While attempting to fix a bug, there is a possibility it may introduce a new bug
  - Mitigation: Regression Testing & Sponsor Oversight
- Risk 2: Navigating Two Code Bases
  - Git and Mercurial are used in different instances to push changes to the Reader View
  - Mitigation: Understanding how to use both systems and confirming with clients.
- Risk 3: OS-Specific Bugs
  - Bugs may arise that are only on an unfamiliar OS
  - Mitigation: Familiarizing ourselves with all OSs so we are prepared for a bug

Testing Plan

- Local Testing
  - Testing for correctness on our local patches
- Review
  - Feedback and further requests from sponsors
- Automated Testing
  - Test across entire codebase to ensure everything is functioning

Questions?