

**MICHIGAN STATE**  
**UNIVERSITY**

# Project Plan

## Dark Theme Darkening

### The Capstone Experience

Team Mozilla

Vivek Dhingra

Zhengyi Lian

Connor Masini

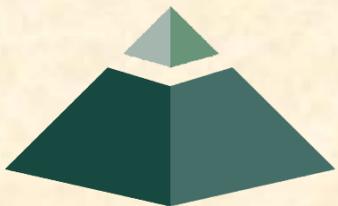
Bogdan Pozderca

Dylan Stokes

Department of Computer Science and Engineering

Michigan State University

Spring 2018



*From Students...  
...to Professionals*

# Functional Specifications

- Expand the Firefox theming API to support theming of additional parts of the browser
  - Bookmarks bar, arrow panel, page-loading indicator
- Increase Google Chrome compatibility
  - Add compatibility for Chrome only theming features to allow for the use of Chrome Themes in Firefox
- Update the Firefox Dark Theme to use the expanded API.
  - Add dark coloration for bookmarks, menus, etc.

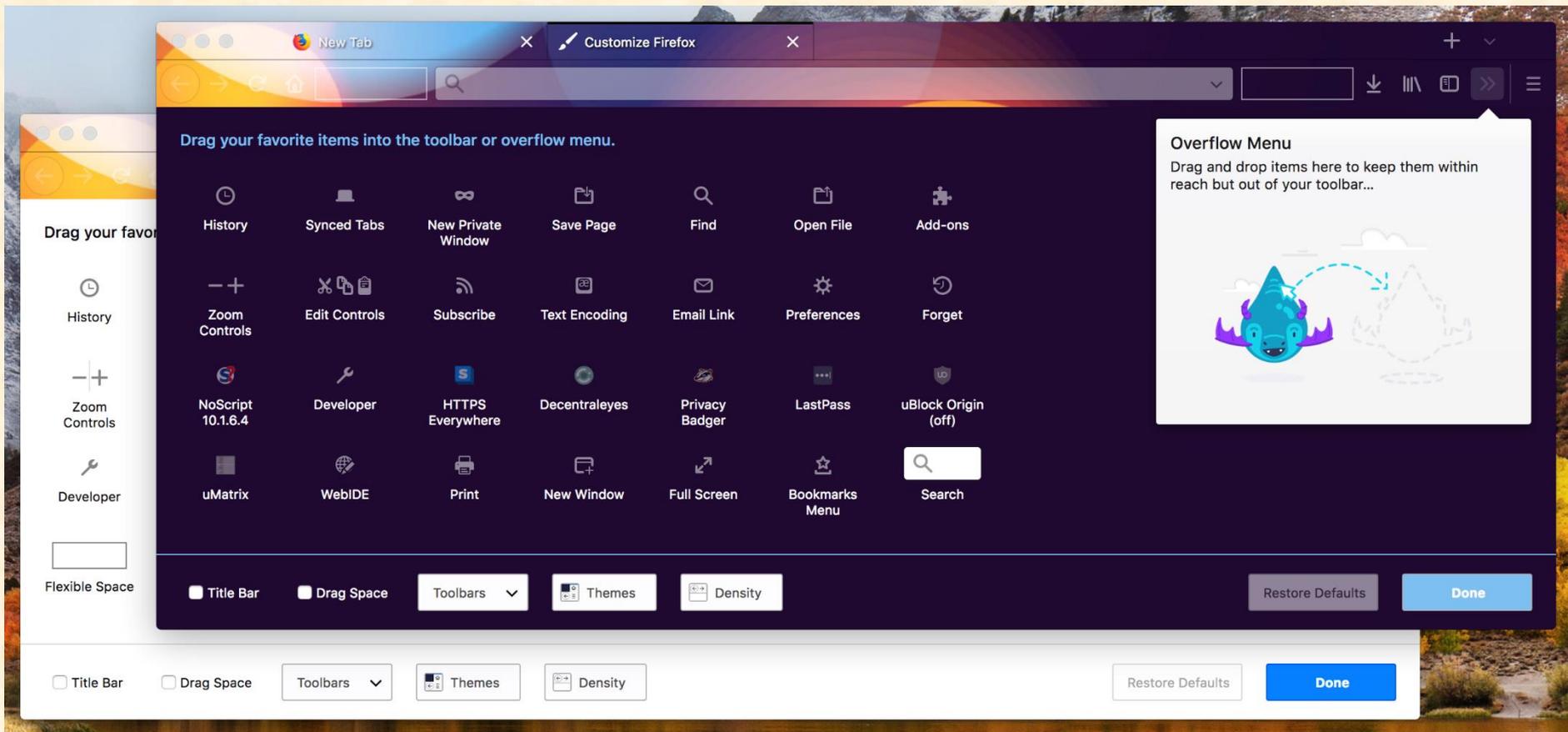


# Design Specifications

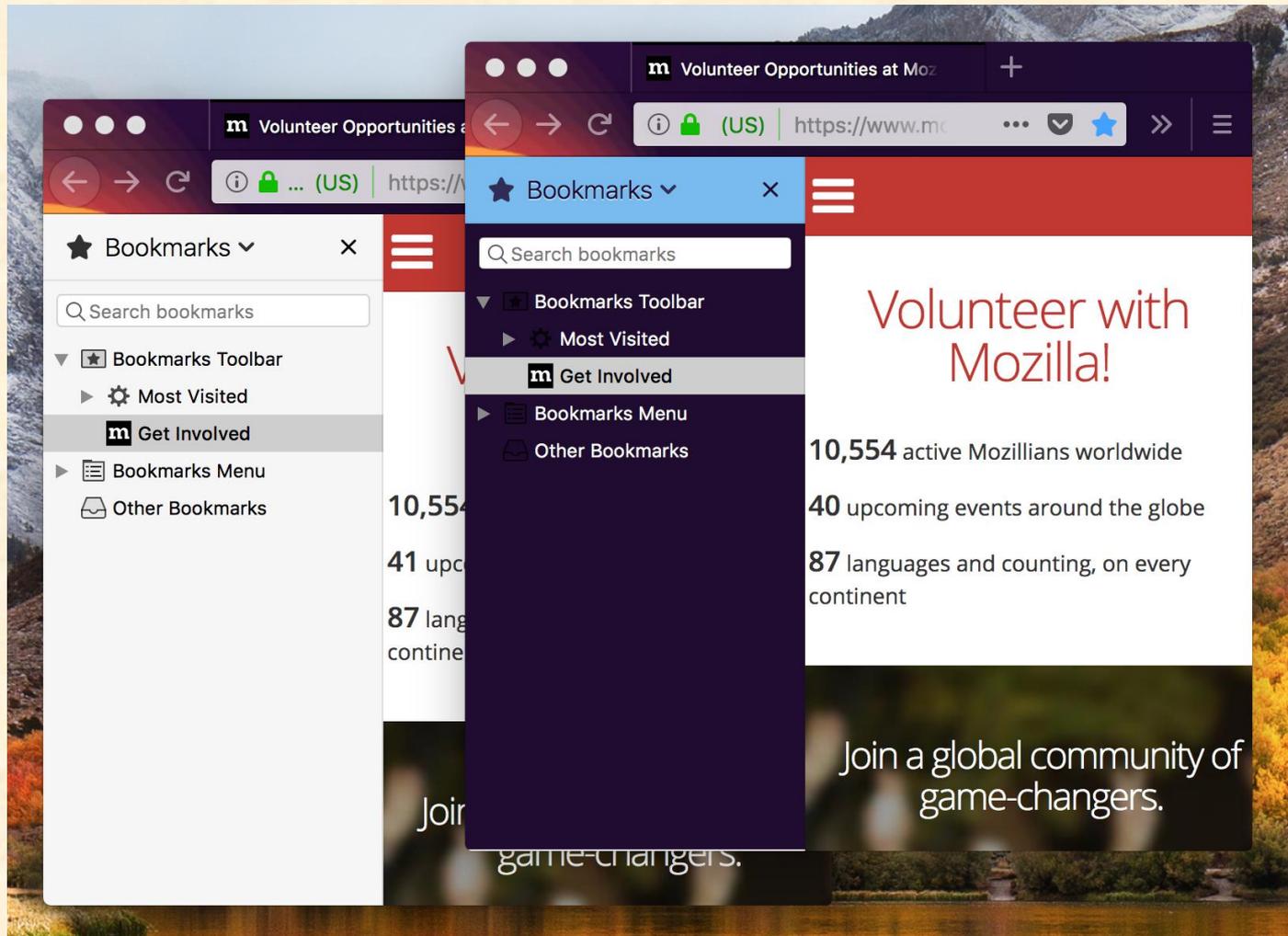
- Users are less likely to switch browsers once personalized
- New theming API will allow developers to create more immersive themes
- In-Product pages
  - Browser settings pages need theming for icons, background, etc.
- Menus
  - Toolbars and select dropdowns are able to be themed
- Autocomplete history pop-up
  - Customizable text and background colors
- Theme Transitions
  - Current state is jumpy and disrupting
  - Users should see a smooth transition between themes



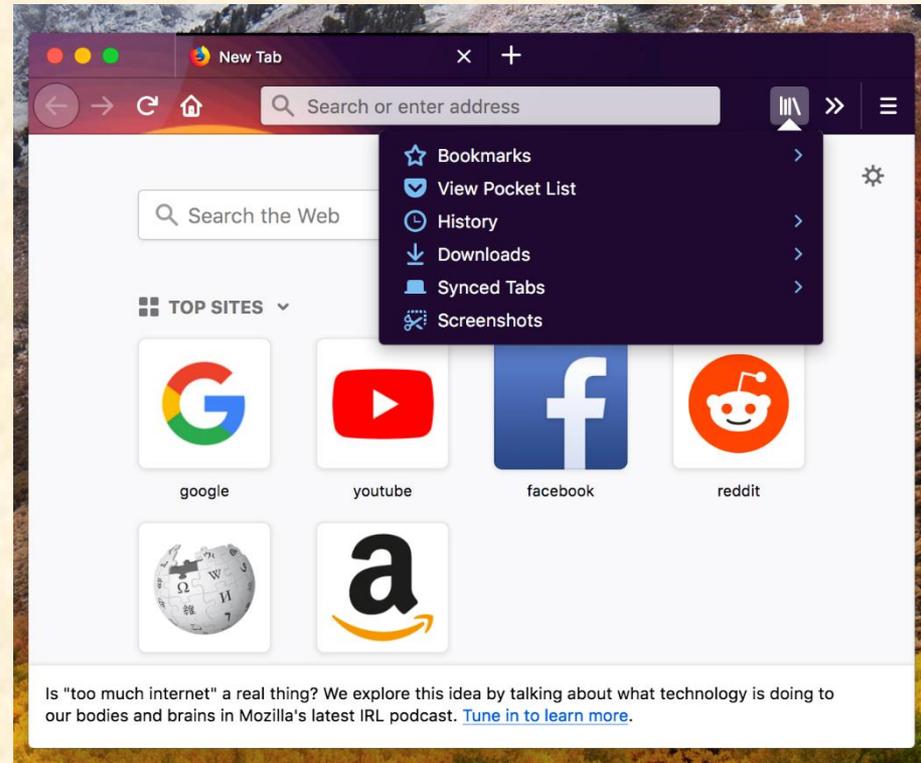
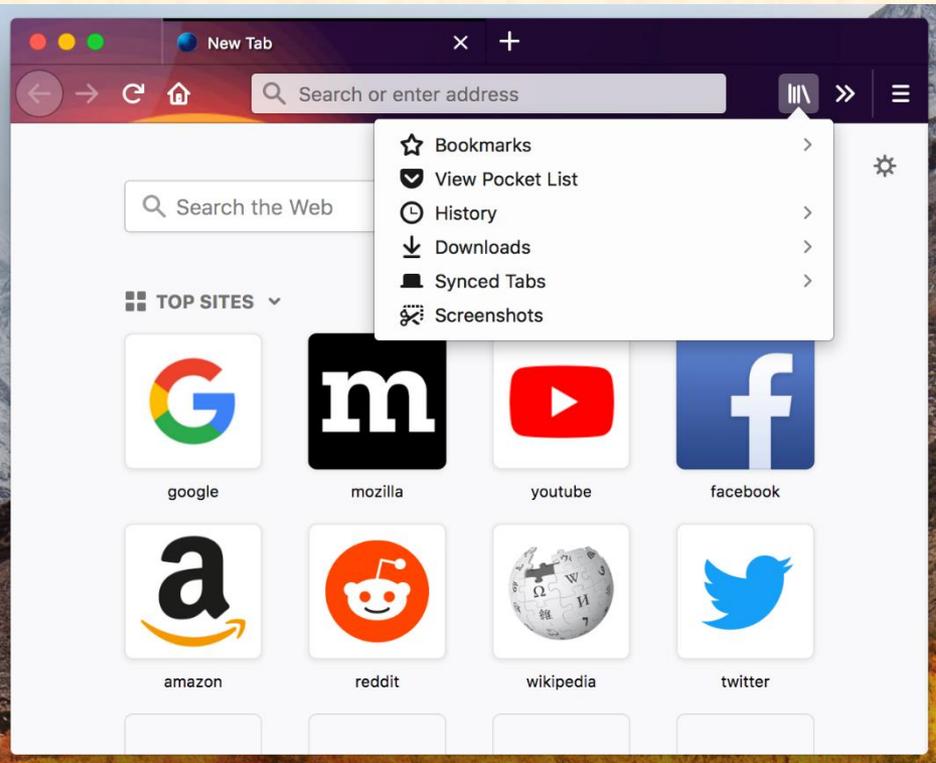
# Screen Mockup: In-Product Page



# Screen Mockup: Bookmarks Bar



# Screen Mockup: Menus

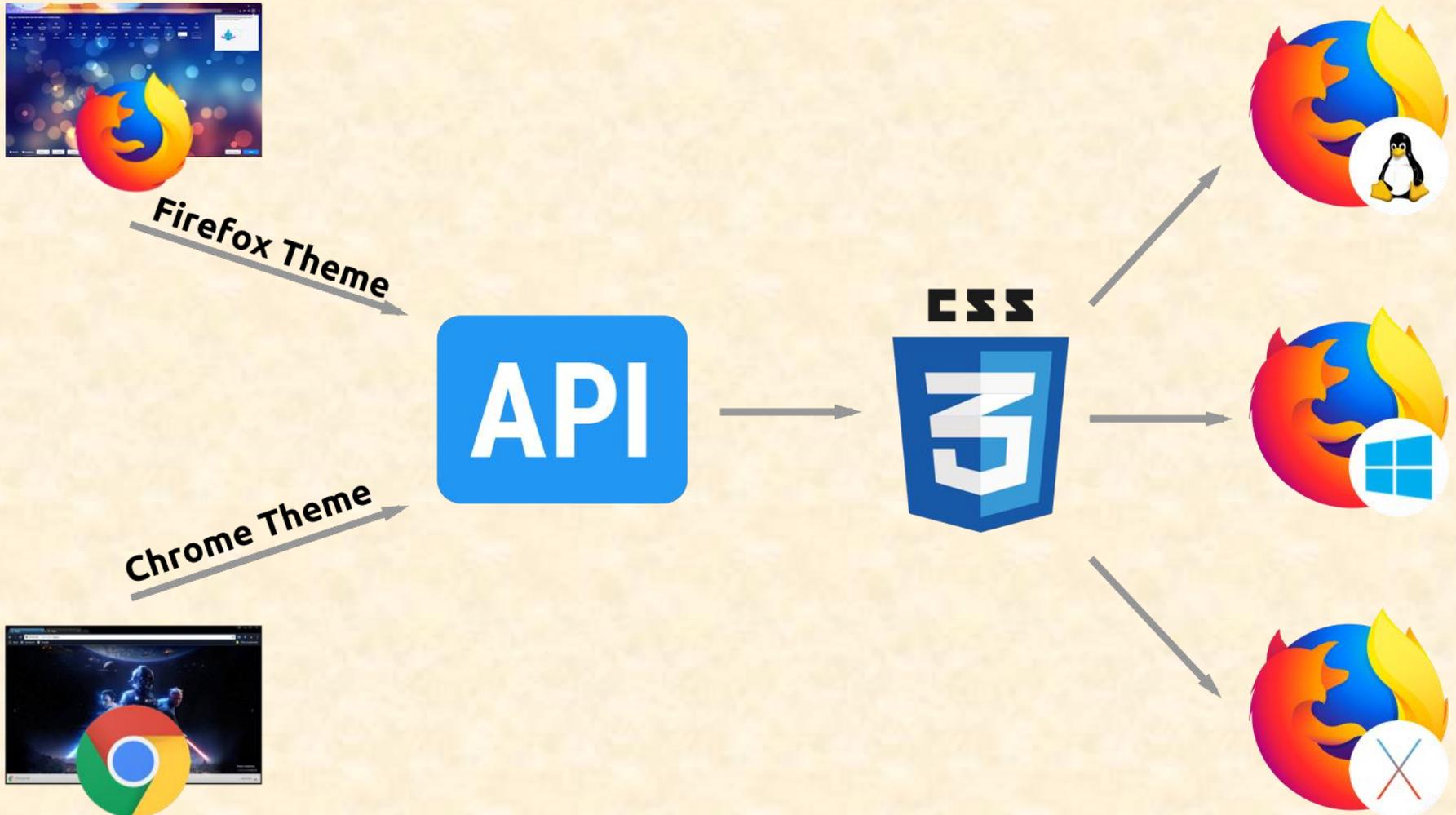


# Technical Specifications

- Use JavaScript and CSS to expand theming API
  - Compatible with Chrome and Firefox theme formats
  - Themes are comprised of a JavaScript file and a JSON file
- Use Mercurial to upload files to Bugzilla review board
  - Changes are reviewed by Firefox contributors
  - Once review is passed, changes are pushed to the Nightly version of Firefox
- Use artifact builds to reduce compilation time
  - Download pre-built C++ components rather than building them locally
  - Trade bandwidth for time



# System Architecture



# System Components

---

- Hardware Platforms
  - Ubuntu Linux Test System
  - Microsoft Windows Test System
  - Apple MacOS Test System
- Software Platforms / Technologies
  - Mercurial for version control
  - JavaScript and CSS to implement API
  - Bugzilla and MozReview for code review
  - Atom text editor



# Risks

- **Large Repository**

- **Description:** Firefox is over 35 million lines code, finding a place to start is challenging.
- **Mitigation:** Using the Searchfox web tool to locate files of interest, rather than grep.

- **Platform Testing**

- **Description:** Need to efficiently code for all platform without breaking compatibility.
- **Mitigation:** Write unit tests using Mozilla's testing suite / physically test on all platforms.

- **Cross-Browser Themes**

- **Description:** Compatibility when transitioning themes from Google Chrome to Firefox
- **Mitigation:** Review resources to get a comprehensive understanding of Google Chrome themes.

- **Code Optimization**

- **Description:** Need to ensure that any additions that are made do not slow down the browser and meet Mozilla's coding standards.
- **Mitigation:** Run unit testing on any added code that tests running times against thresholds and submit code for review.



# Questions?

---

?

?

?

?

?

?

?

?

?

