

Urban Planning & Codebase Architecture.

Or, how not to end up with a Wendy's in the middle of your codebase

By Romello Goodman

My names Romello 🖐️

- By Day, I'm a Sr Software Engineer at The New York Times 📰
- My team ensures The Times' delivers a cohesive cross-platform user experience worthy of our journalism
- We're Hiring: ✨ nytco.com/careers ✨

My names Romello 🖐️

- By Night, I'm a computational graphic designer
- I ❤️ the web
- I ❤️ cities
- Twitter [@mellogood](https://twitter.com/mellogood)
- My latest project is goodgraphics.xyz

Washington, DC is located on stolen land

- Washington D.C. sits on the ancestral lands of the Anacostans, Piscataway and Pamunkey peoples
- We cannot discuss land and the way we use it without acknowledging that it was stolen

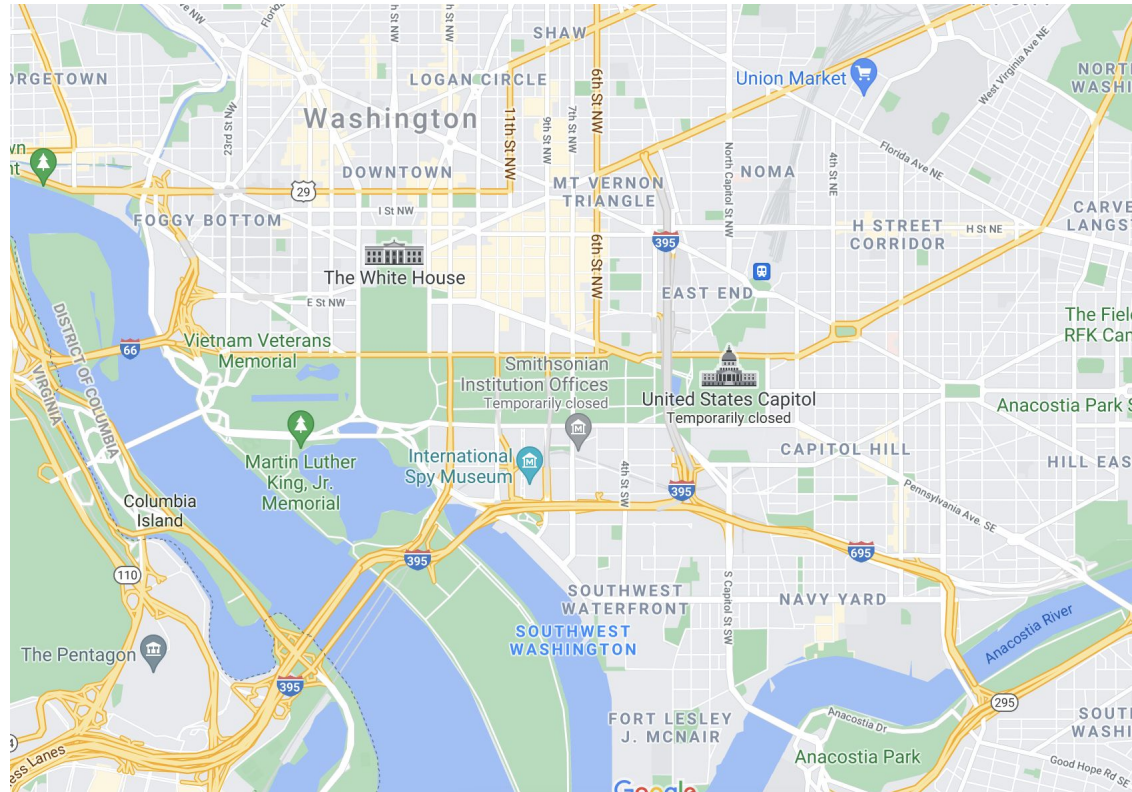
Takeaways

1. Codebases are like cities
2. Maps and Signs help teams navigate a codebase
3. Desire Paths create fresh ways to navigate a codebase
4. Comment Periods create engagement and share ideas

Washington, DC 1790



Washington, DC Today



Washington, DC Today



Washington, DC Today



Lessons from Pierre L'Enfant

- Past learnings influence our future decisions
- Ideal solutions can fall out of date
- Finished products usually defer from our plans
- Our projects will have many maintainers

Codebases are like cities

- A large number of people are constantly moving through them
- Each person trying to reach their destinations
- Each group has their own priorities and goals
- Both are designed to optimize this flow

Software Developers are like Urban Planners

- Coding is more than just building a house
- Cities last longer
- Cities contain more people
- Cities are networked
- Cities are dynamic



Urban Planner Concepts

- Maps and Signs
- Desire Paths
- Public Hearings & Comment Periods

Maps and Signs



Maps and Signs

- Maps help people locate specific places
- Signs help people navigate to their destination
- Maps and Signs can help developers navigate codebases

Maps and Signs - Files and Folder Structure

- Files and Folders can implicitly help developers navigate
- A consistent system makes the layout clear
- It becomes easy to structure your code

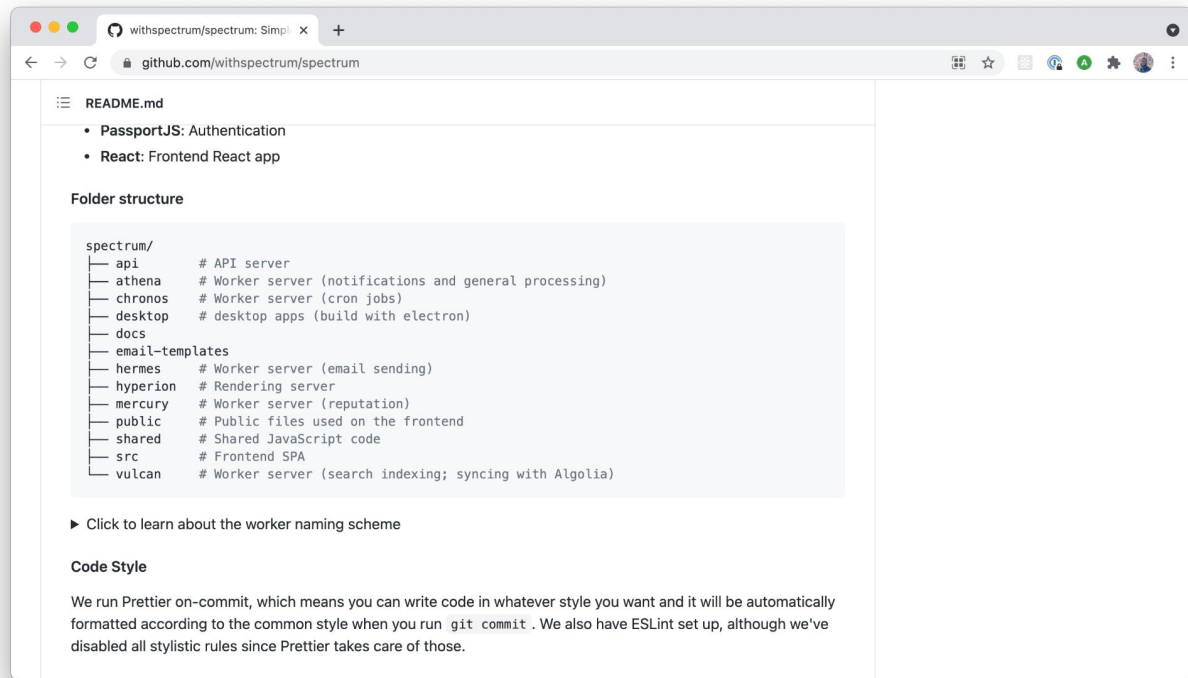
Maps and Signs - Files and Folder Structure

- Stage 1: Start with Component.js
 - Component.js
- Stage 2: Create a Folder called Component
 - Component
 - index.js
 - styles.js
 - utils.js

Maps and Signs - Documentation

- Documentation is explicit
- Docs need to be written and maintained
- Good Docs guide developers
- Good Docs help developers find the correct files to work in

Maps and Signs - Documentation



Maps and Signs - Documentation Generation

- Static Code Analysis analyzes your code to create docs
- Automatically created maps and diagrams
- Documentation of our codebases is always up to date
- Fulfills the “self-documenting code” myth

Maps and Signs - Documentation Generation

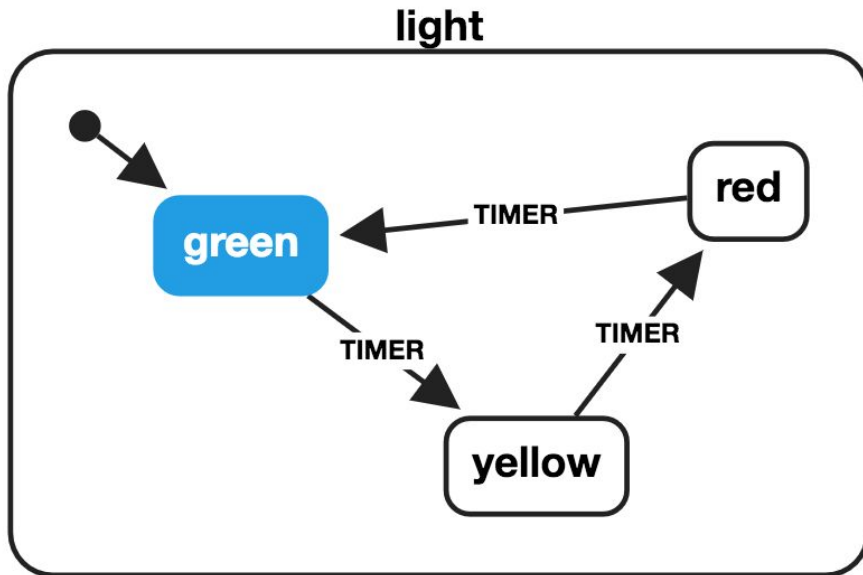
```
import { createMachine } from 'xstate';

const lightMachine = createMachine({
  id: 'light',
  initial: 'green',
  states: {
    green: {
      on: {
        TIMER: 'yellow'
      }
    },
    yellow: {
      on: {
        TIMER: 'red'
      }
    },
    red: {
      on: {
        TIMER: 'green'
      }
    }
  }
});

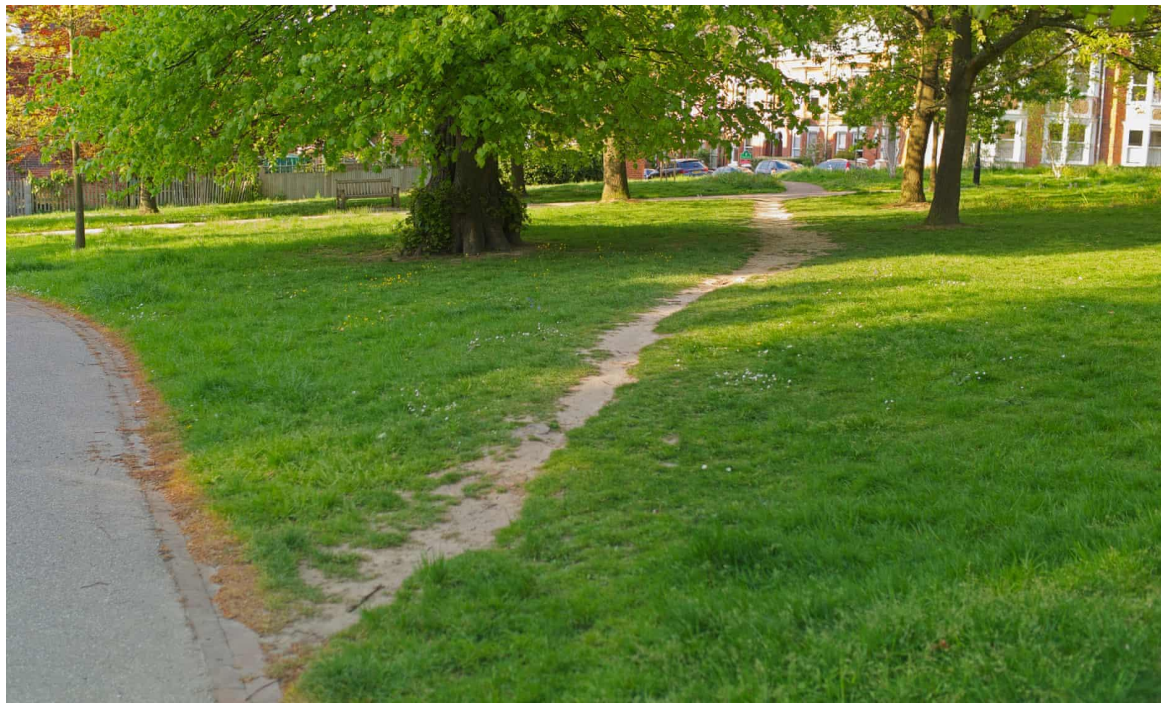
const currentState = 'green';

const nextState = lightMachine.transition(currentState, 'TIMER').value;

// => 'yellow'
```



Desire Paths



Desire Paths

- “paths & tracks made over time by the wishes & feet of walkers, especially those paths that run contrary to design or planning”
- People create new use cases for the city
- People use the city in their own way

Desire Paths - Fresh ways to navigate a codebase

- Allow engineers to create new paradigms and patterns
- Navigating a codebase requires understanding what files exist
- When the “right” place is unclear we tend to place logic where it “feels right”
- Code Editor’s TreeView is bad for discoverability

Desire Paths - TreeViews

- TreeViews facilitate one way of navigating a codebase
- Nested folders hide complexity
- Understanding dependencies is harder at a glance
- Doesn't help developers understand a codebase

Desire Paths - Use Search and Long Filenames

- Use your Code Editor's search functionality
- Add more information to your filenames
- Jest convention of `Component.test.js`
- Fixes Ctrl + F “index.js” problem
- Engineers build their own navigation paths and mental model

Desire Paths - Filenames

- Component
 - index.js
 - styles.js
 - utils.js

Desire Paths - Filenames

- Component
 - index.js
 - styles.js
 - utils.js
 - ChildComponent
 - index.js
 - styles.js
 - utils.js

Desire Paths - Filenames

- Component.js
- Component.styles.js
- Component.utils.js
- Component.ChildComponent.js

Public Hearings & Comment Periods

Unified RFC Template

In template gallery ☆ ↻ ☁

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[System Title]

Authors

Name	Team	Email

Revision History
[This should contain a history of the versions of this document, as it is updated.]

Version Number	Date

The RFC will be reviewed against the categories described in [this rubric](#).

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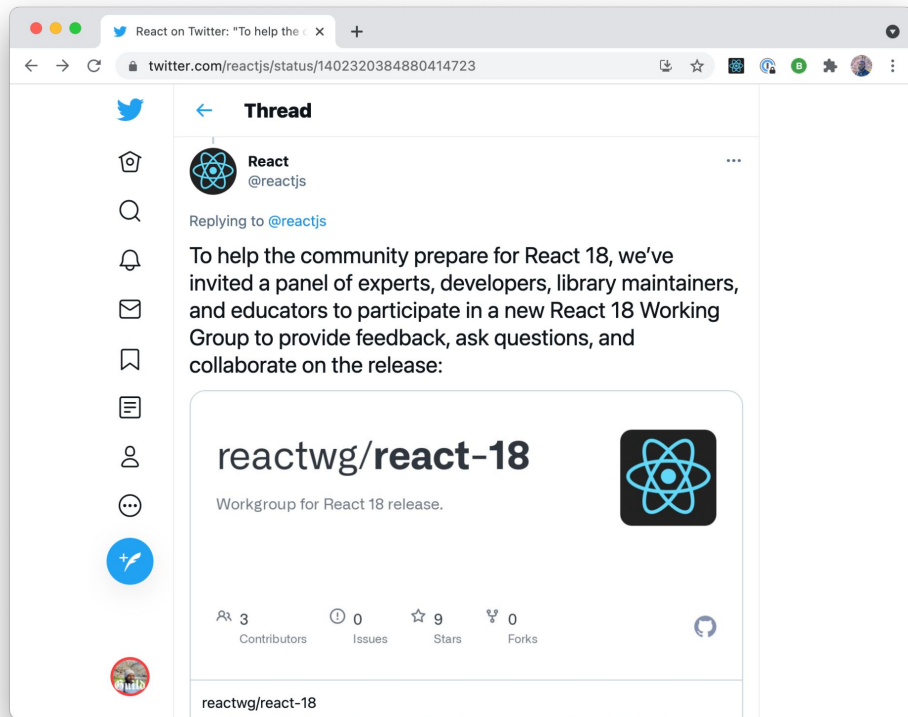
Public Hearings & Comment Periods

- Comment Periods allow for the public to submit feedback
- Allows feedback from the community
- Gives everyone a chance to participate
- Helps discover new insight or overlooked details

Public Hearings - The New York Times

- Request For Comments (RFC) allow teams to solicit comments and feedback on their solutions
- Made up of “Design and Implementation”
- Reviewed by our Architecture Review Board
- Foster collaboration amongst teams and engineers
- “RFCs help us ensure that our org is building the right things and building the things right”

Public Hearings - React Working Group



Takeaways Revisited

1. Codebases are like cities
2. Maps and Signs help teams navigate a codebase
3. Desire Paths create fresh ways to navigate a codebase
4. Comment Periods create engagement and share ideas

Cities and codebases can evolve overtime





Sections

The Washington Post
Democracy Dies in Darkness

Get one year for \$29

Sign in

Transportation

D.C. acquires 'Dave Thomas Circle' on New York Avenue through eminent domain



Concept A Plan



SWA/Balsley

Virtual Circle | Concept Design | 54



Thank you for coming



Appendix

- [Indigenous Tribes of Washington, D.C.](#)
- [A Brief History of Pierre L'Enfant and Washington, D.C.](#)
- [davidkpiano/xstate Repo](#)
- [withspectrum/spectrum Repo](#)
- [Desire paths: the illicit trails that defy the urban planners](#)
- [D.C. Will Pay \\$13 Million to Buy Out the City's Most Notorious Wendy's Location](#)
- [D.C. acquires 'Dave Thomas Circle' on New York Avenue through eminent domain](#)
- [A new rendering of the Dave Thomas Circle redesign suggests an important bike lane extension](#)
- [Say Goodbye To That Wendy's At The Hellish Dave Thomas Circle](#)

Etc Slides

Original Summary

When urban planners design cities their decisions are at the scale of decades and millennia. As city's mature they have to adapt and re-architect to meet changing demographics and use cases. Using Architect Pierre L'Enfant's design of The United States capital I will examine how systems change overtime from their initial ideation. I will cover how we as engineers can use urban planning concepts to adapt our codebases and not end up like Washington, DC where 200 years later a Wendy's food restaurant is located in the middle of one of the city's busiest traffic circles.

Throughout the talk, I will use ideas for examples of how to structure different aspects of React projects. From ideas on how to architect Redux to where your CSS-in-JS and tests might live.

Public Hearings - The New York Times

- Architecture Decision Record (ADR) document our decisions in our codebases
- Onboarding - Future devs can read a history of decisions and quickly get up to speed
- Ownership Handover - Information is accessible to everyone and not specific engineers
- Alignment & Standards - Team members can easily align on solutions and ADRs can be reused by other teams