```
tt()
```

Schedule

1. Show and tell: dataset & concept
2. Web architecture
3. Libraries, frameworks en bundlers
4. Boilerplate opzetten met Svelte en D3
5. All together!

Schedule

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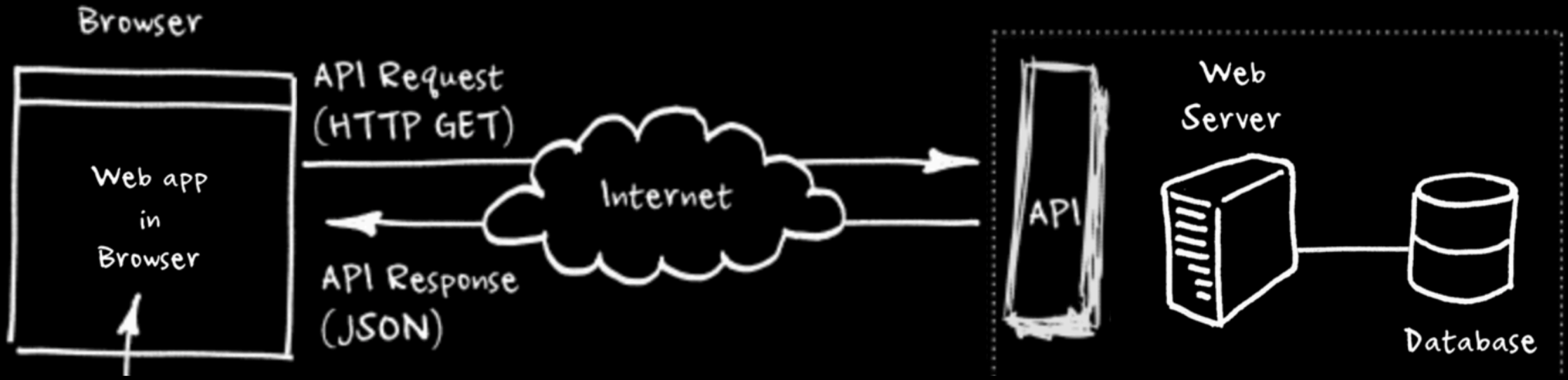
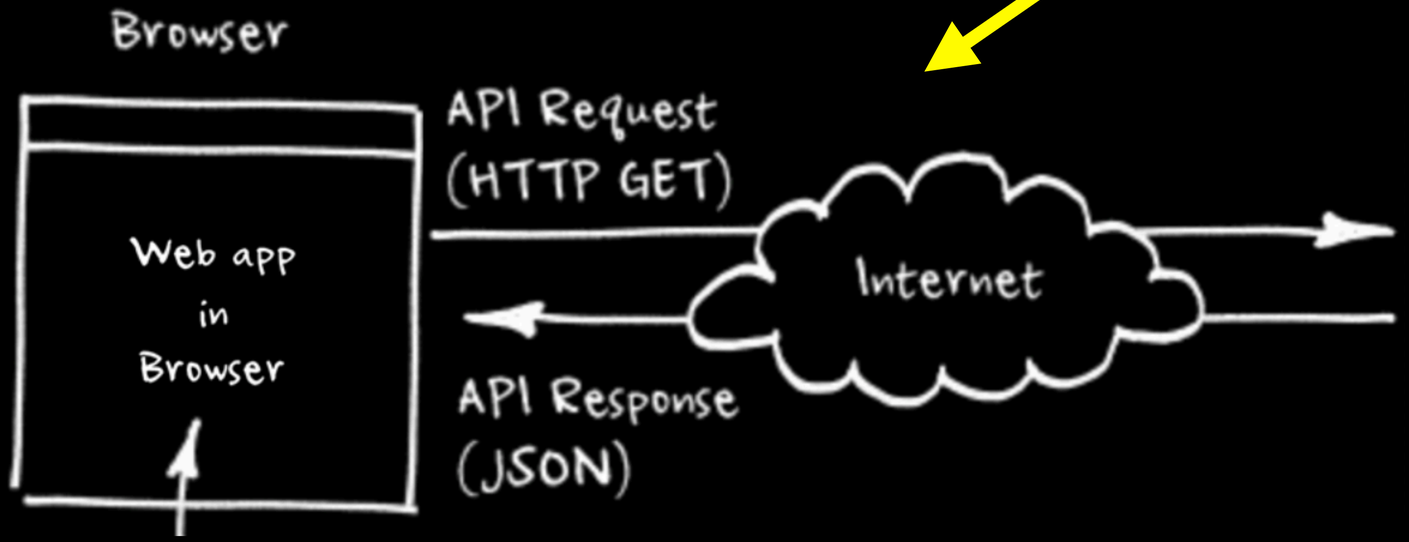
Web architecture



Web architecture

Front-end



CANCELLED

Web architecture

Web architecture

Web architecture

```
<script src="d3.js"></script>
```

```
<script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
```

Web architecture

- What if the CDN or externally loaded library **goes down**?
- What if you want to work in HTML/CSS/JS **components**?
- What if the library gets **updated with a new major version?**
- What if you want to use additional **(library) plugins?**

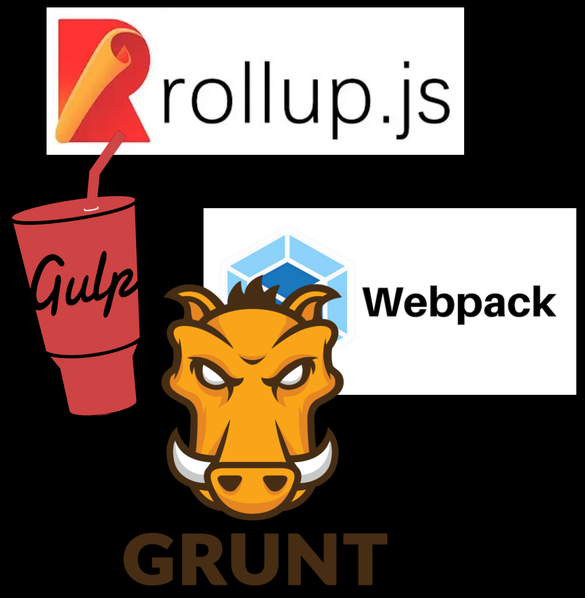
Web architecture

Client-side code

Web architecture

Client-side code

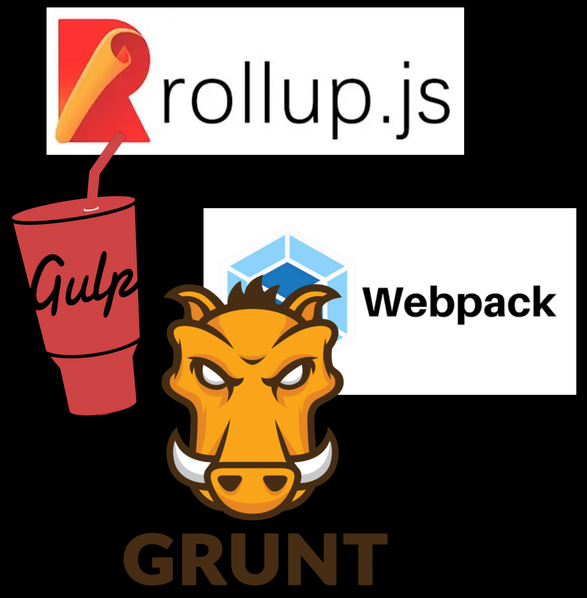
Build tools



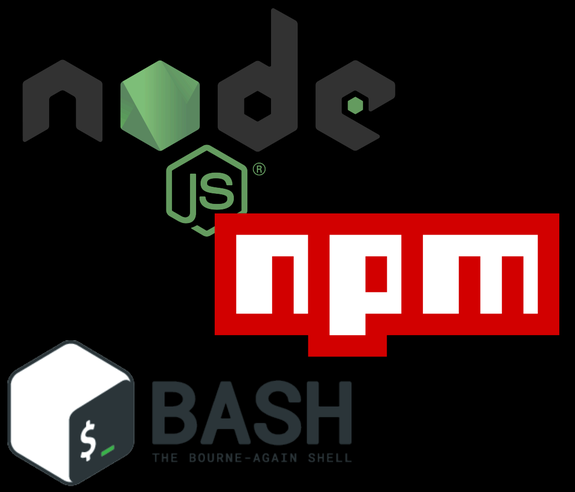
Web architecture

Client-side code

Build tools



Scripting



Web architecture

Client-side code

Build tools

GRUNT

Scripting

Web architecture

Om JavaScript op je PC te runnen.

Om packages te downloaden.

Om commando's uit te voeren.

Schedule

1. Show and tell: dataset & concept
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Tech stack

A **JavaScript tech stack** refers to the combination of technologies, tools, libraries, and frameworks that developers use to build web applications.

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A **JavaScript tech stack** refers to the combination of technologies, tools, libraries, and frameworks that developers use to build web applications.

1. ***Library***
2. ***Framework***
3. ***Bundler***

Libraries, frameworks & bundlers

Library

Framework

Bundler

Libraries, frameworks & bundlers

Library

Framework

Bundler

Library (D3)

A **JavaScript library** is a collection of pre-written JavaScript code that provides specific, reusable functions and utilities to help developers accomplish common tasks more easily. Instead of writing complex code from scratch, you can leverage a library to perform repeated tasks.

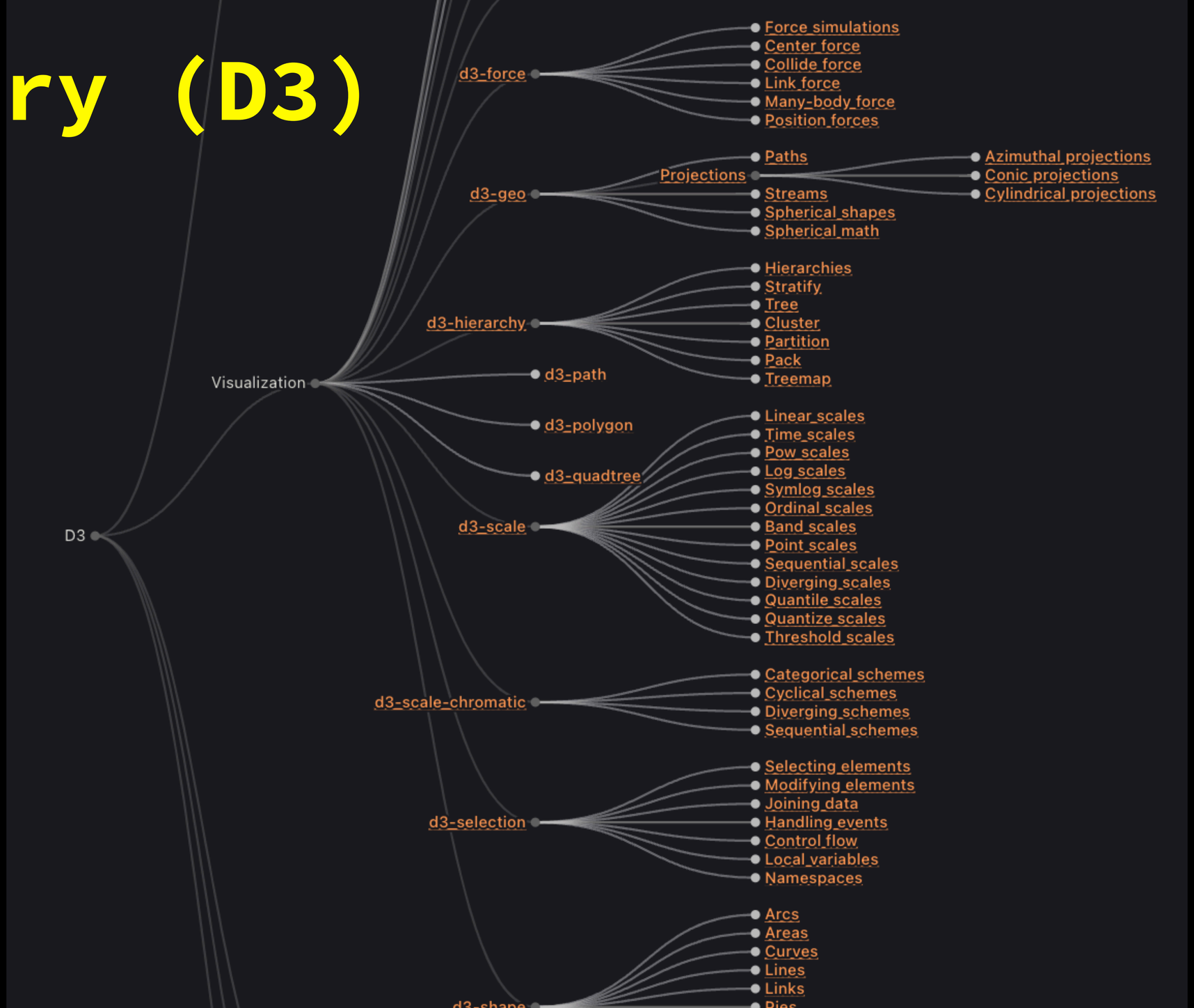
Library (D3)

D3 (or **D3.js**) is a free, open-source JavaScript library for visualizing data. Its low-level approach built on web standards offers unparalleled flexibility in authoring dynamic, data-driven graphics.

Library (D3)

D3 is not a charting library in the traditional sense. **It has no concept of “charts”.**

Library (D3)


D3
Visualization
d3-force
Force simulations
Center force
Collide force
Link force
Many-body force
Position forces
d3-geo
Projections
Paths
Azimuthal projections
Conic projections
Cylindrical projections
Streams
Spherical shapes
Spherical math
d3-hierarchy
Hierarchies
Stratify
Tree
Cluster
Partition
Pack
Treemap
d3-path
d3-polygon
d3-quadtree
d3-scale
Linear scales
Time scales
Pow scales
Log scales
Symlog scales
Ordinal scales
Band scales
Point scales
Sequential scales
Diverging scales
Quantile scales
Quantize scales
Threshold scales
d3-scale-chromatic
Categorical schemes
Cyclical schemes
Diverging schemes
Sequential schemes
d3-selection
Selecting elements
Modifying elements
Joining data
Handling events
Control flow
Local variables
Namespaces
Arcs
Areas
Curves
Lines
Links

Library (D3)

- Flexibel: er zijn geen ‘chart’ types dus veel customizability
- Standaarden: wat er al op het web is DOM, SVG
- Dynamisch: goed voor interactieve viz want data joining

Libraries, frameworks & bundlers

Library

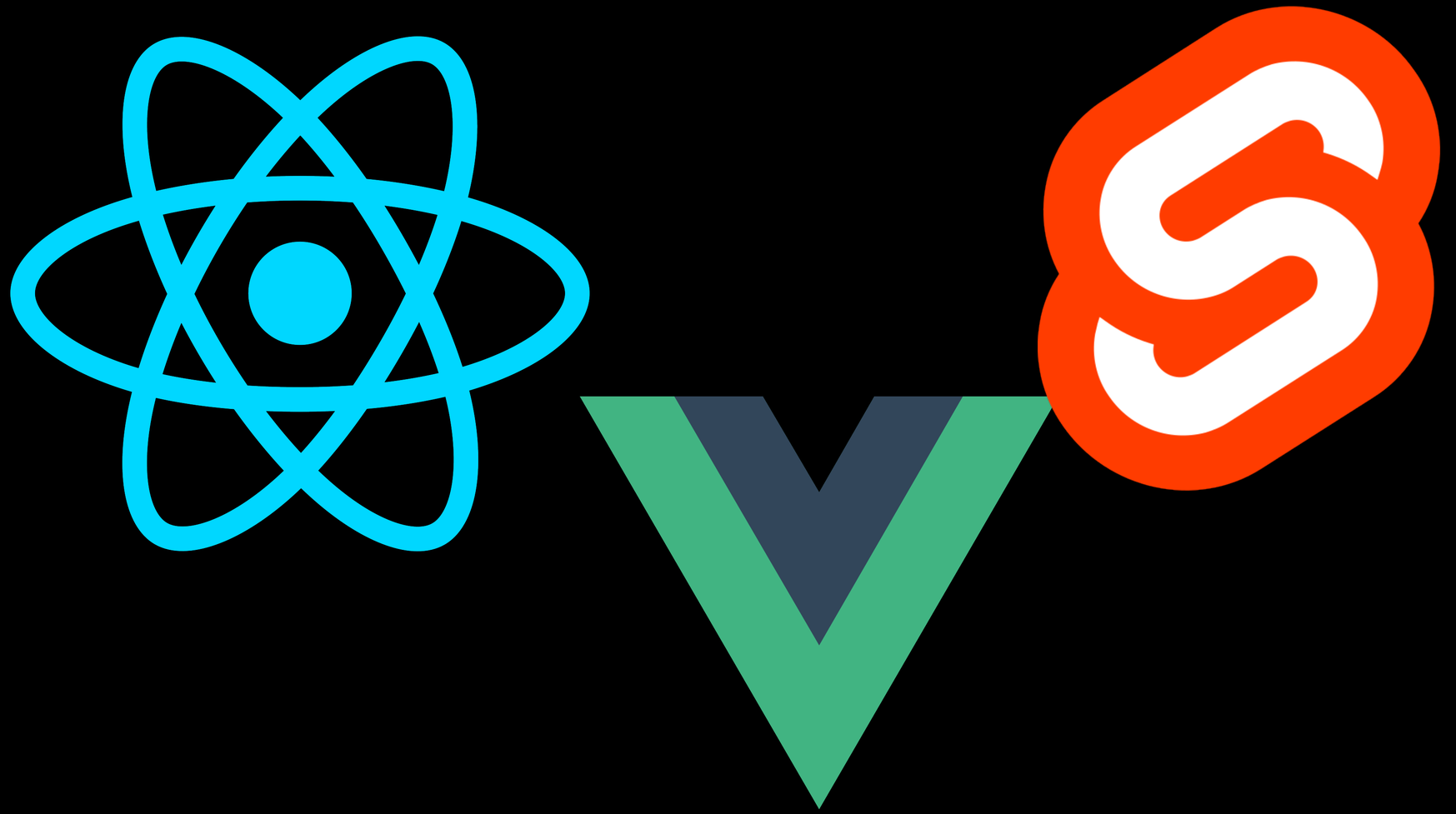
Framework

Bundler

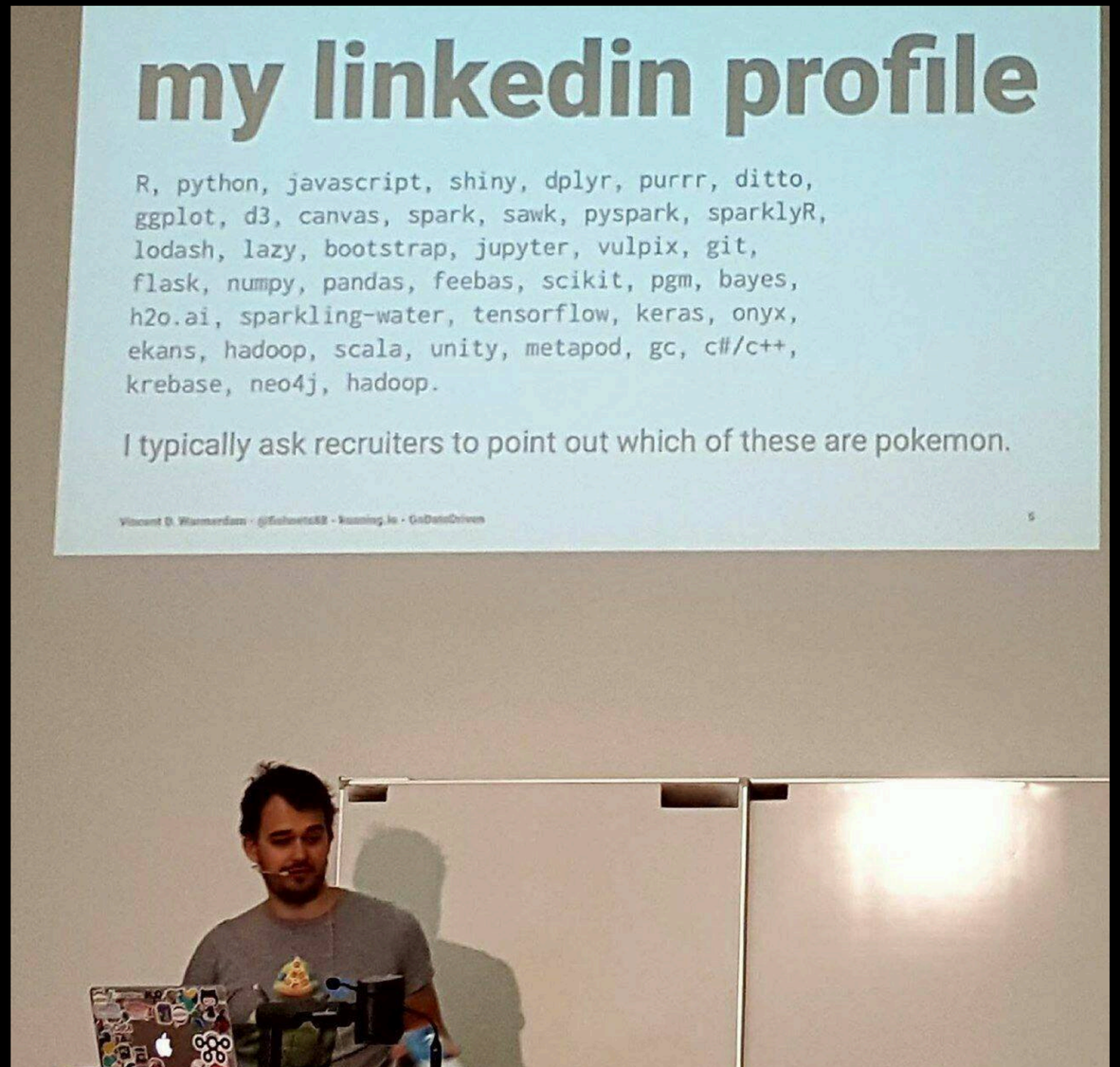
Framework (svelte)

A **JavaScript framework** provides a structured environment and a set of tools for building web applications, offering predefined architecture and guidelines. Usually comes with built-in features like routing, state management, and data handling.

Framework (svelte)

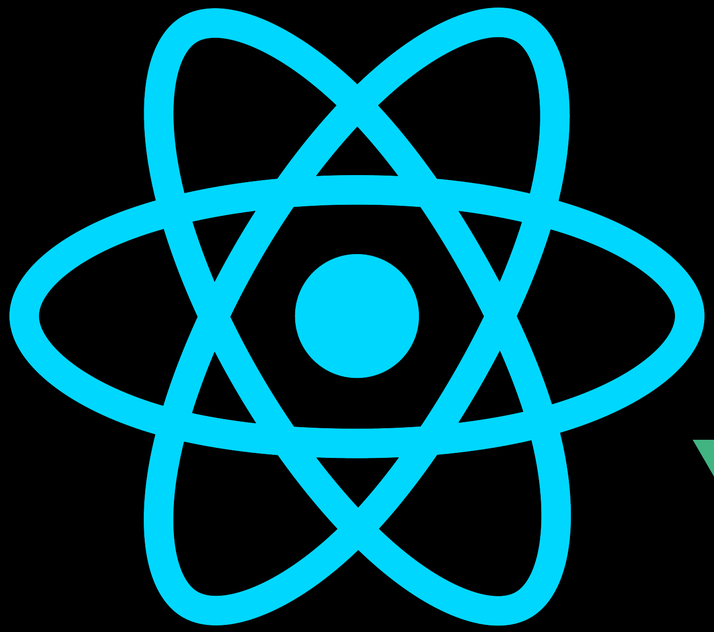


Framework (svelte)



Framework (svelte)

All of these (at least in their current form)
will be obsolete in the next 3-5 years.



Framework (svelte)

- Architectuur en standaarden (opinionated)
- Component-gebaseerd, UI componenten, single file
- Reactieve data binding, dom updates
- Routing (SPA) tussen pagina’s

Framework (svelte)

```jsx
// Counter.js (React)

import { useState } from 'react';

function Counter() {
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>Count: {count}</p>
      <button onClick={() => setCount(count + 1)}>Increment</butt
    </div>
  );
}

export default Counter;
```

```jsx
<!-- Counter.svelte (Svelte) -->

<script>
  let count = 0;
  function increment() {
    count += 1;
  }
</script>

<div>
  <p>Count: {count}</p>
  <button on:click={increment}>Increment</button>
</div>
```

Component, state management.

Framework (svelte)

It’s better to learn **vanilla code. If you know JavaScript** as it enables you to switch between framework whenever the need requires it. This is also why we hammer on documentation skills, both writing and reading it.

Framework (svelte)

Use less or more

as you wish.

D3 in Svelte

As with React, you can use Svelte exclusively for rendering if you like, and only use D3 modules that don't manipulate the DOM. Here is a line plot of an array of numbers that uses d3-shape and d3-scale.

LinePlot.svelte

svelte

```svelte
<script>
  import * as d3 from 'd3';

  export let data;
  export let width = 640;
  export let height = 400;
  export let marginTop = 20;
  export let marginRight = 20;
  export let marginBottom = 20;
  export let marginLeft = 20;

  $: x = d3.scaleLinear([0, data.length - 1], [marginLeft, width - marginRight]
  $: y = d3.scaleLinear(d3.extent(data), [height - marginBottom, marginTop]);
```

Libraries, frameworks & bundlers

Library

Framework

Bundler

Bundlers (vite)

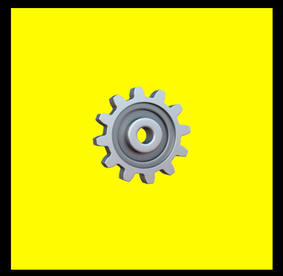
A **JavaScript bundler** is a tool that take multiple files (and assets like CSS, images, etc.) and bundle them into a single (or few) output files for the browser. Mostly used for automating tasks and transforming code.

Bundlers (vite)

// Input

```
css/
├─ typography.scss
├─ layout.scss
└─ colors.scss
```

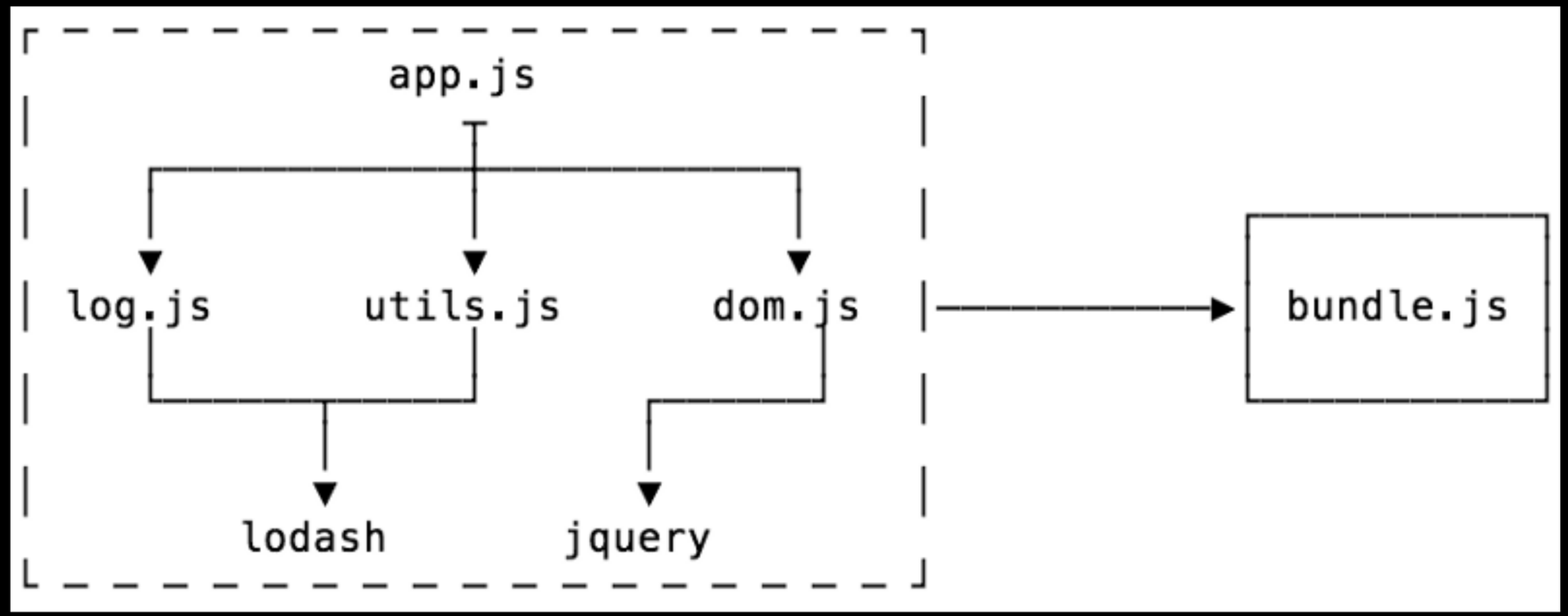
// Build



// Output

```
css/
└─ style.css
```

Bundlers (vite)



Bundlers (vite)

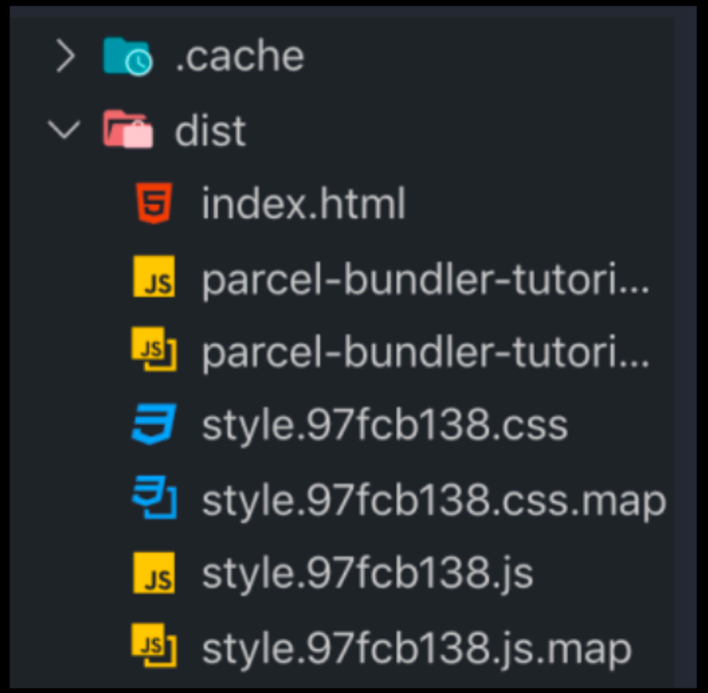
- Bundle HTML (components into complete markup)
- Bundle CSS (post/preprocess)
- Bundle (client-side) JavaScript components

- Use task runners to automate many more…

Bundlers (vite)

```
✨ Built in 444ms.

dist/parcel-bundler-tutorial.8bdf8f45.js      1.48 KB    241ms
dist/style.134bbd53.css.map                     779 B      5ms
dist/parcel-bundler-tutorial.8bdf8f45.js.map    756 B      2ms
dist/index.html                                 639 B      5ms
dist/style.134bbd53.css                         337 B     13ms
```



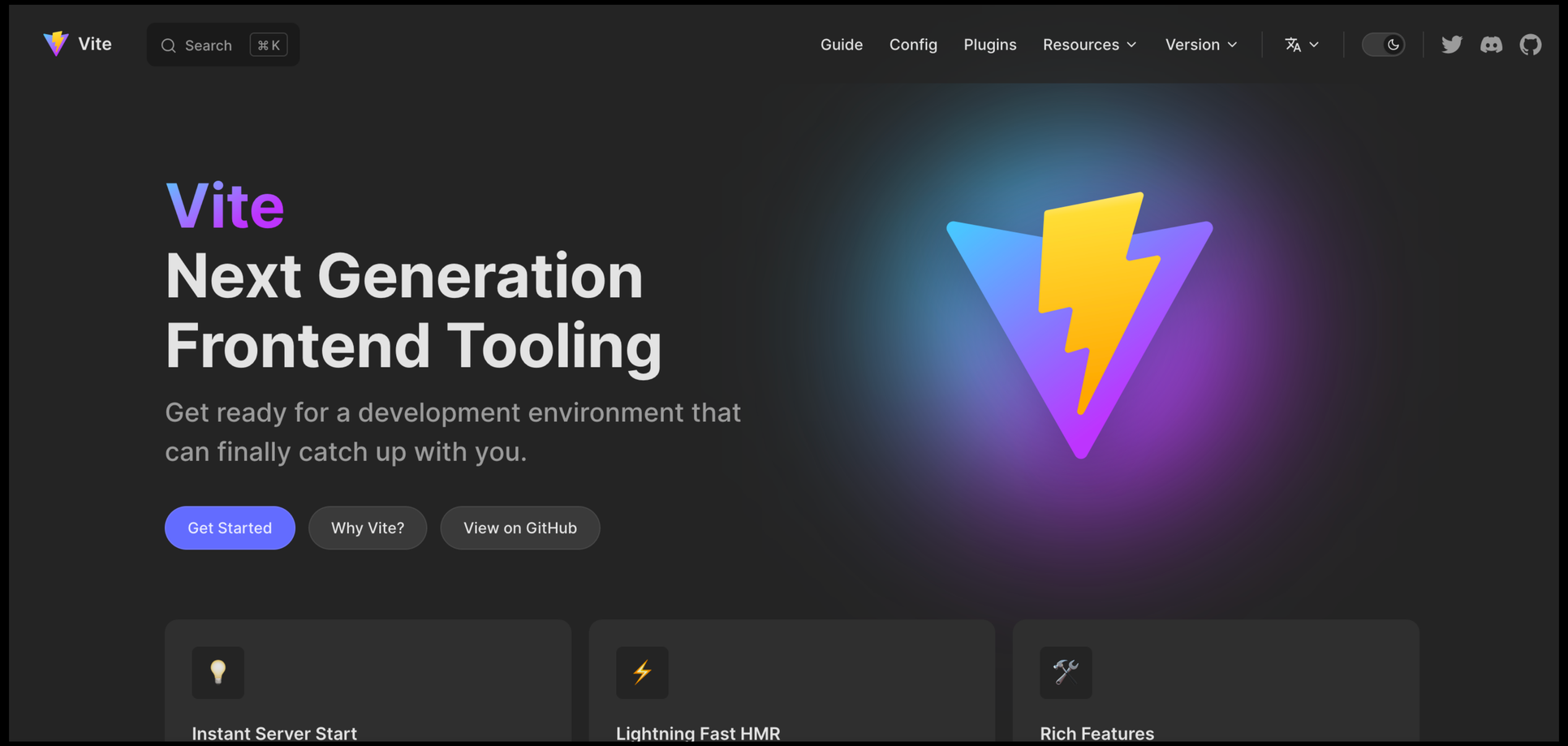
Bundlers (vite)

We used to have a lot of separate tools and libraries that were connected using task runners, Gulp, Grunt, Webpack

bla bla bla, etc…

But now:

Bundlers (vite)



All-in-one toolkits (runtimes)

Libraries, frameworks & bundlers

Library:
Om visualisaties te maken.

Framework:
Om in componenten te werken.

Bundler:
Om in componenten te werken.

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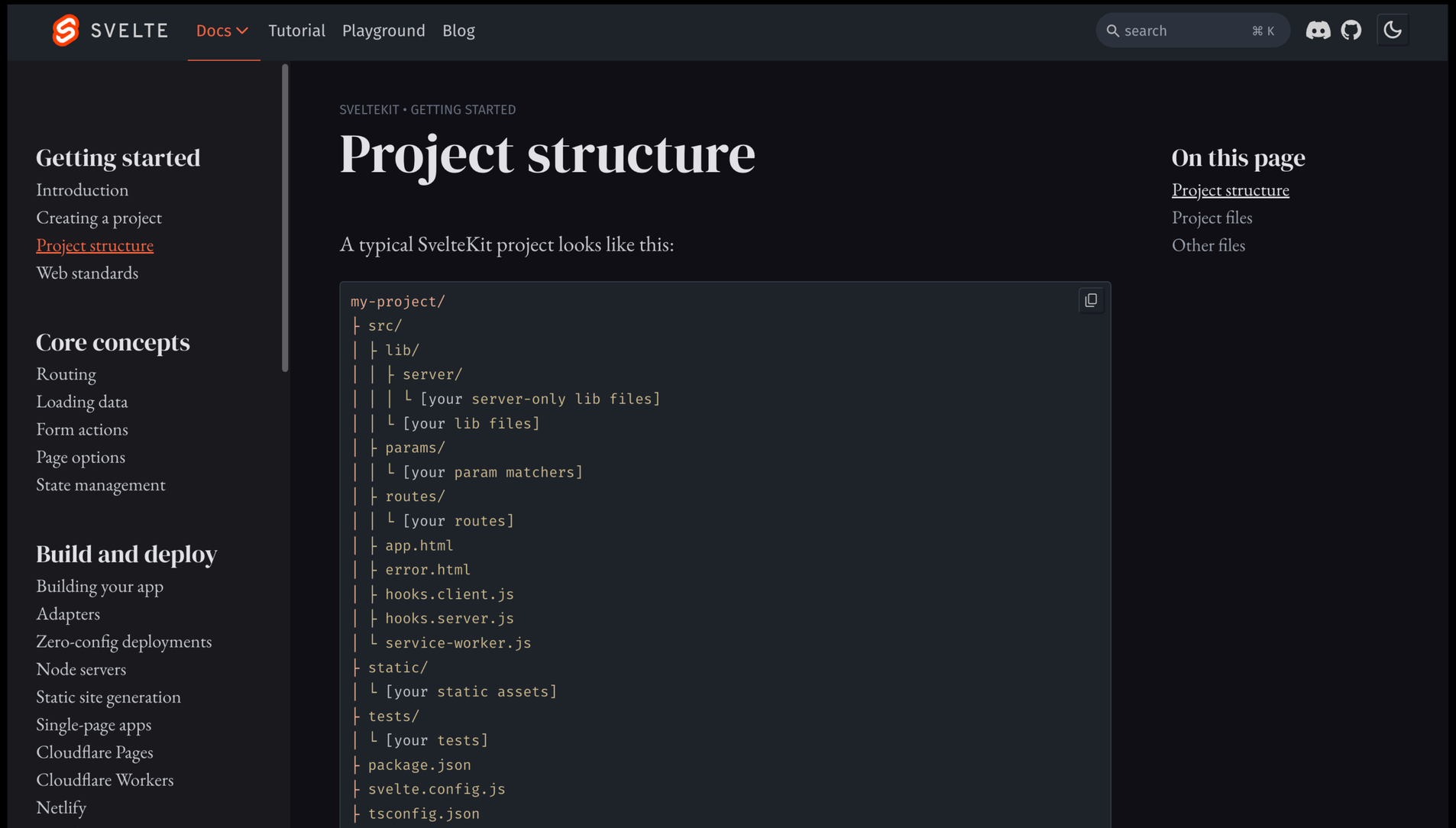
Boilerplate opzetten



Boilerplate opzetten

- Begin een nieuw project met SvelteKit
- Lees de documentatie, begrijp de structuur
- Installeer D3 binnen je project
- Kijk of D3 werkt door een example chart te maken

Uncaught SyntaxError
Unexpected end of input