Inclusive Applications with React
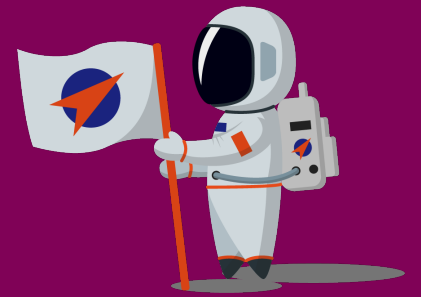
Building the Web for everyone!

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  - Community
  - Company
- Currently working as FEE at AWS - USA

Before we start...

Being "inclusive" on the Web…

- It is **<u>not</u>** only about a language or gender
- Please, do **<u>not</u>** engage in toxic arguments
- **Let's make a better Web for everyone!**
  - With **<u>true</u>** empathy about others

What do I mean by "inclusive applications"?

Requirements

- NodeJS
- IDE/code editor: WebStorm, VS Code
- Yarn
- Modern browsers:
  - Firefox, Google Chrome

Ready?

Activity
Create your first React app

Simple listing component

Understanding our App

Let's see the basic structure

Let's take some minutes to create our app

Preview in Development Mode

Let's understand what are Yarn/NPM scripts

The most important Yarn scripts

- **"yarn install"** install dependencies
- **"yarn start"** will run a development environment
- **"yarn build"** will create a production-ready application that we can deploy in a web server.

Activity
Create your first component

Simple listing component

Let's create our first component

Activity
Enhance your first component
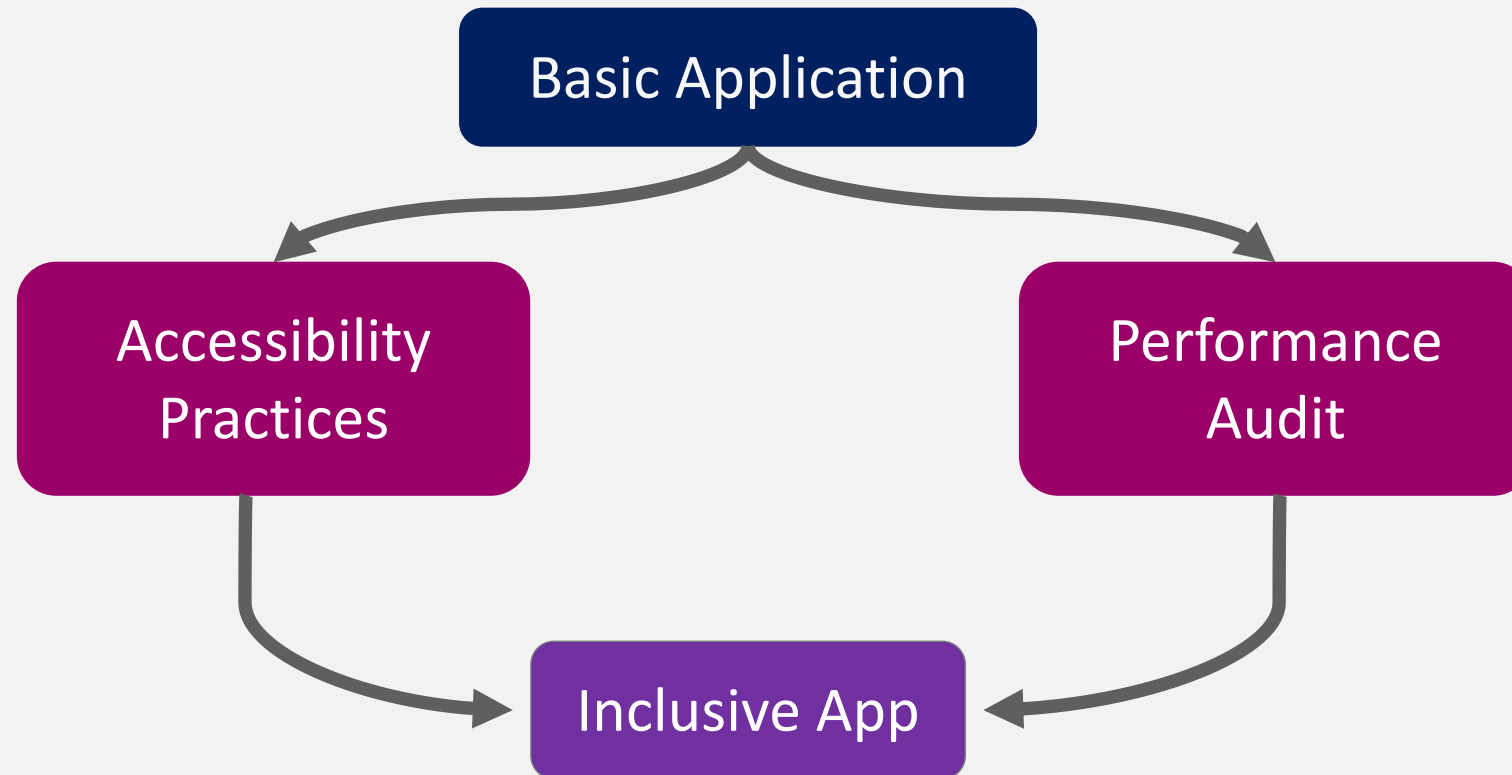
Let's use a more complex layout with Bootstrap (CSS framework)

Let's enhance our first component

Sweet!
Let's go to the next level!

Inclusive Web?

Two main pillars

```
                    ┌──────────────────────┐
                    │   Basic Application   │
                    └──────────────────────┘
                      ↙                    ↘
   ┌──────────────────┐          ┌──────────────────┐
   │   Accessibility   │          │   Performance    │
   │    Practices      │          │      Audit       │
   └──────────────────┘          └──────────────────┘
              ↘                        ↙
                 ┌──────────────────┐
                 │   Inclusive App   │
                 └──────────────────┘
```

Wait! But what is accessibility?

Screen reader?

Accessibility = A11y

- Web accessibility (also referred to as **a11y**) is the design and creation of websites that can be used by everyone.

- Accessibility support is necessary to allow assistive technology to interpret web pages.

Disability Categories

- Visual
- Auditory
- Motor
- Cognitive

- https://webaim.org/intro/#people

Screen reader

- A **screen reader** is a form of assistive technology (AT)[1] that renders text and image content as speech or braille output. Screen readers are essential to people who are blind,[2] and are useful to people who are visually impaired,[2] illiterate, or have a learning disability.[3]
    - https://en.wikipedia.org/wiki/Screen_reader

Screen readers

- NonVisual Desktop Access or NVDA, open source (Windows)
  - https://webaim.org/articles/nvda/

- JAWS (Windows)
  - https://www.freedomscientific.com/Products/software/JAWS/
  - https://webaim.org/articles/jaws/

- Voice Over (macOS)
  - https://support.apple.com/guide/voiceover/turn-voiceover-on-or-off-vo2682/mac

- Orca (Linux)
  - https://wiki.gnome.org/Projects/Orca

Accessibility Web Standards & Laws

- The Web Content Accessibility Guidelines (WCAG)
  - WCAG 2 Checklist
  - Decoding Label and Name for Accessibility
- United States Laws
  - Section 508 Checklist
- Laws Throughout the World

- https://webaim.org/articles/#standards

Demo
Screen reader in action

Understanding how people with disabilities will "see/hear" our application/site
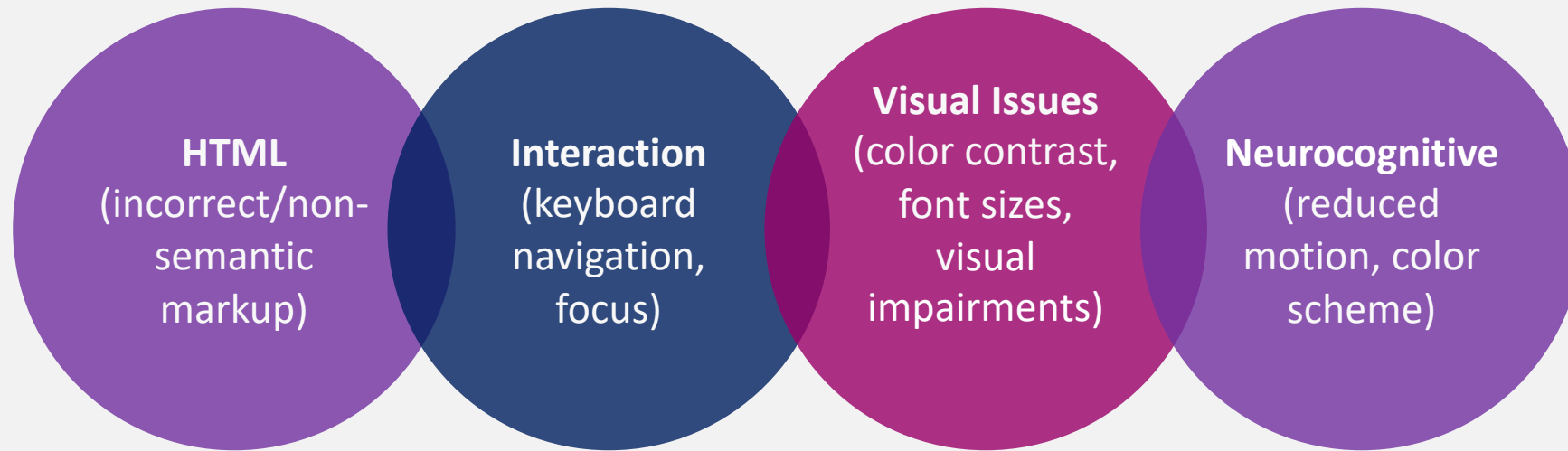
Activity
Accessibility Audit

Let's see what tools we can leverage

Tools

- **Axe** for Firefox and Chrome
- **Lighthouse** by Google

- Others
  - Tenon.io
  - SortSite (Desktop)

What type of accessibility issues may I encounter?

HTML (incorrect/non-semantic markup)

Interaction (keyboard navigation, focus)

Visual Issues (color contrast, font sizes, visual impairments)

Neurocognitive (reduced motion, color scheme)

Activity
Fixing markup issues

Markup?

Let's fix our HTML issues

Activity
Fixing color contrast

Why is this important?

Tools

- **Contrast Checker**
  - https://webaim.org/resources/contrastchecker/

- **Contrast with Chrome DevTools**
  - https://webaim.org/articles/contrast/devtools

Let's fix our color contrast issues

Activity
Creating a "form"

No accessibility there!

Let's create our "register" form

Activity
Improving accessibility in our "form"

Let's improve our "register" form

Activity
Implement a "skip to main content" element

Let's add a "skip to main content" link

Activity
Understanding
React Spectrum

Tools

- **React Spectrum by Adobe**
  - A collection of libraries and tools that help you build adaptive, accessible, and robust user experiences.
- https://react-spectrum.adobe.com/

Let's create a "form" with React Spectrum

Activity
Adding "prefer-color-scheme"

Let's create an adaptive app based on color scheme of the user

Visual impairments

Tools

- **NoCoffee for Firefox**
  - https://addons.mozilla.org/en-US/firefox/addon/nocoffee/

Demo
Simulating visual impairments

Demo
Deploy app to Vercel

ARIA

Activity
"aria-label" example

Automated Audits

Demo
ESLint Plugin or
React-axe?

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Thank you!

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