



Waterford Institute of Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Module: Web App Development 2

Overview

Presenters:

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Where:

<https://tutors-svelte.netlify.app/#/course/wad2-2021-wit.netlify.app>

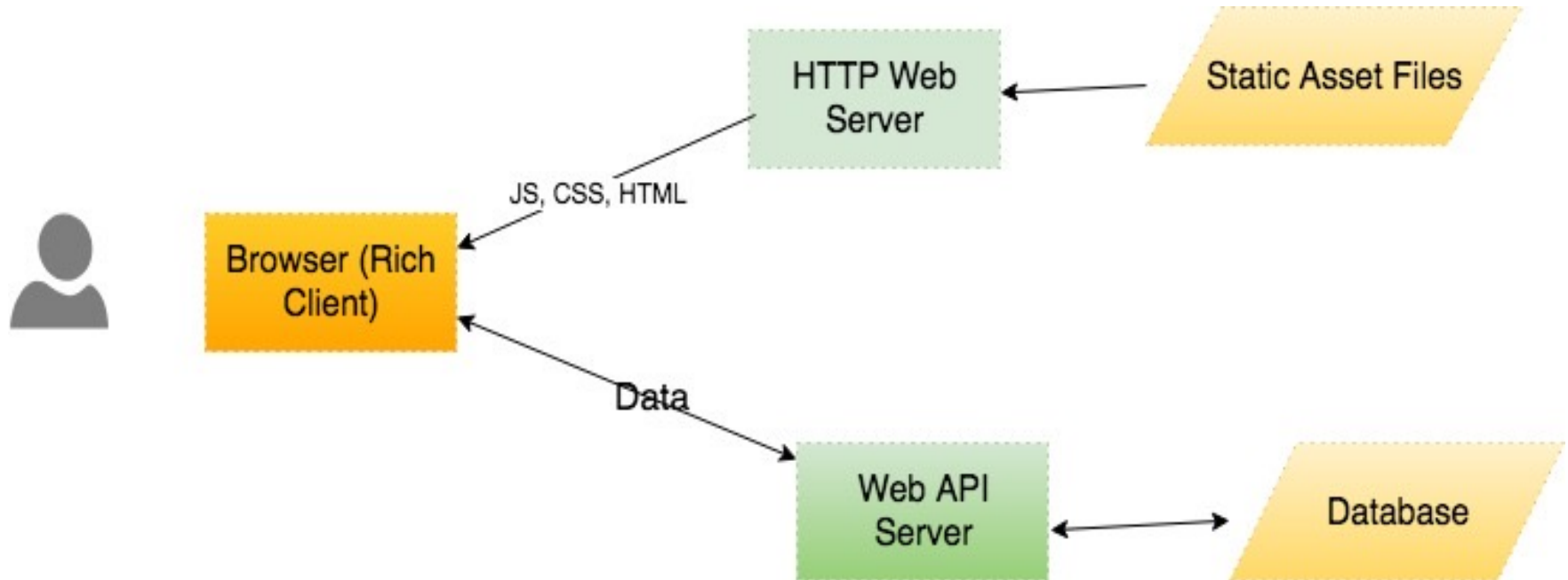
TL;DR

**Design and develop modern, secure
Web apps.**

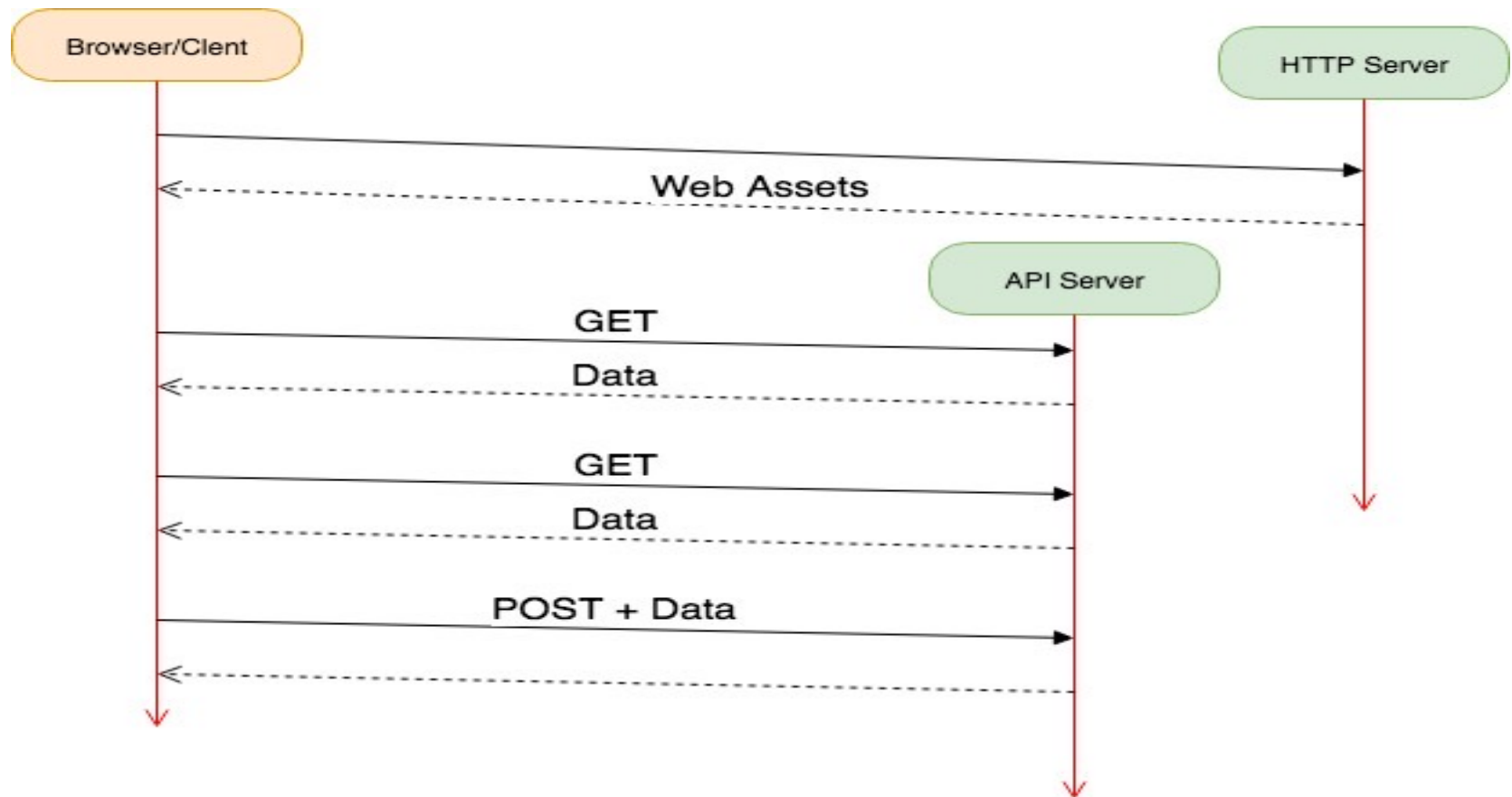
Agenda

- Context
- This module's focus
- Software installation requirements

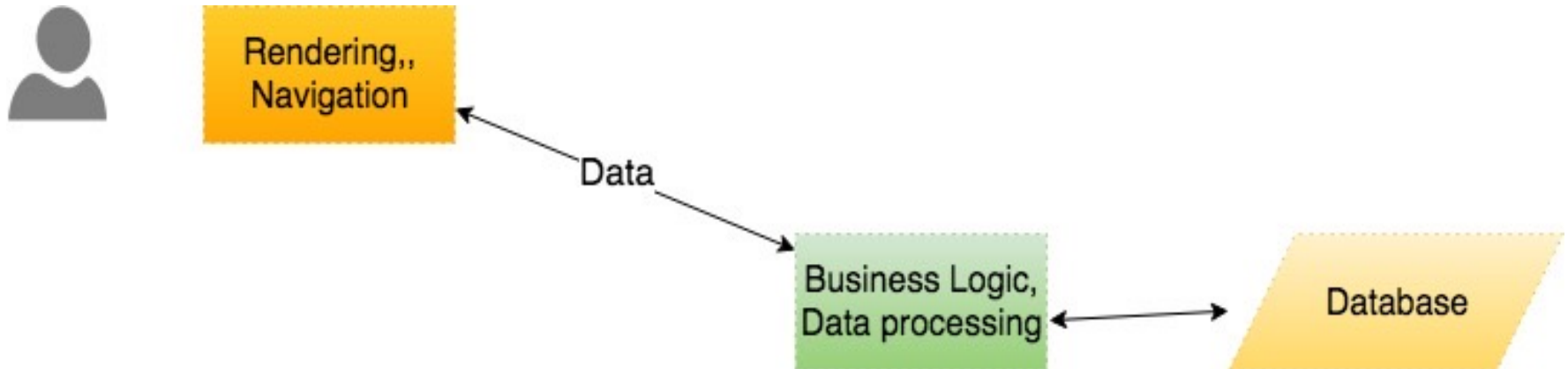
Modern Web Apps - Architecture



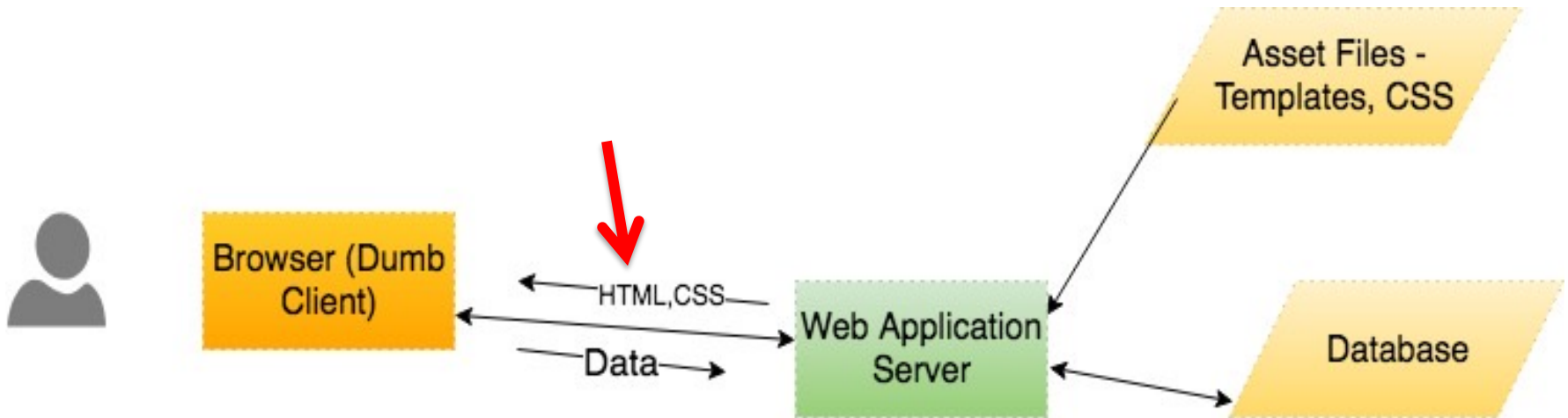
Modern Web Apps – HTTP Communications flow



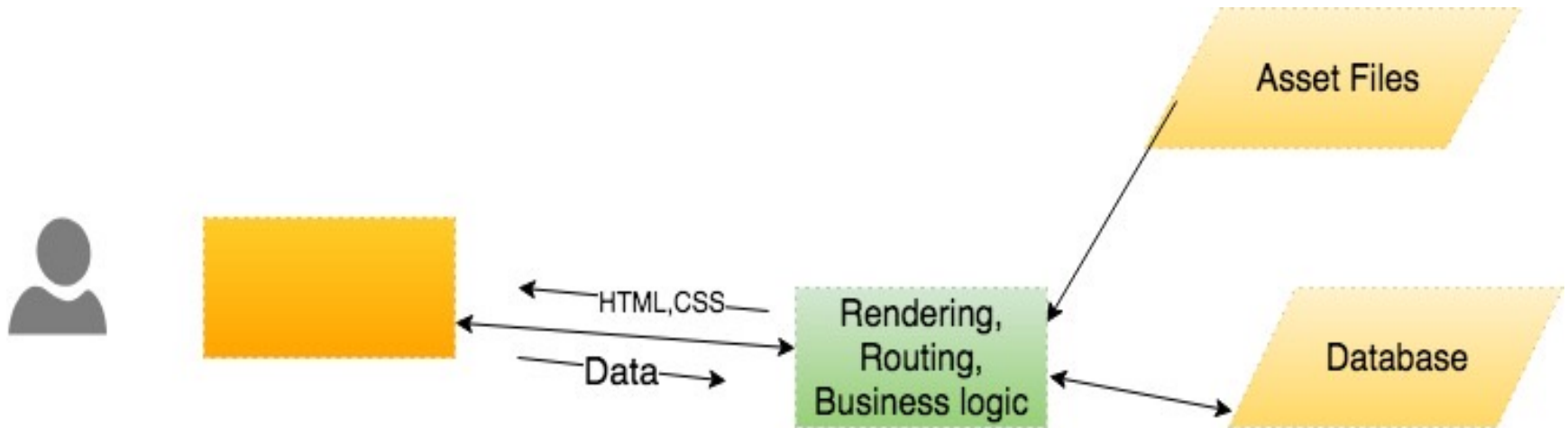
Modern Web Apps – Sub-system roles



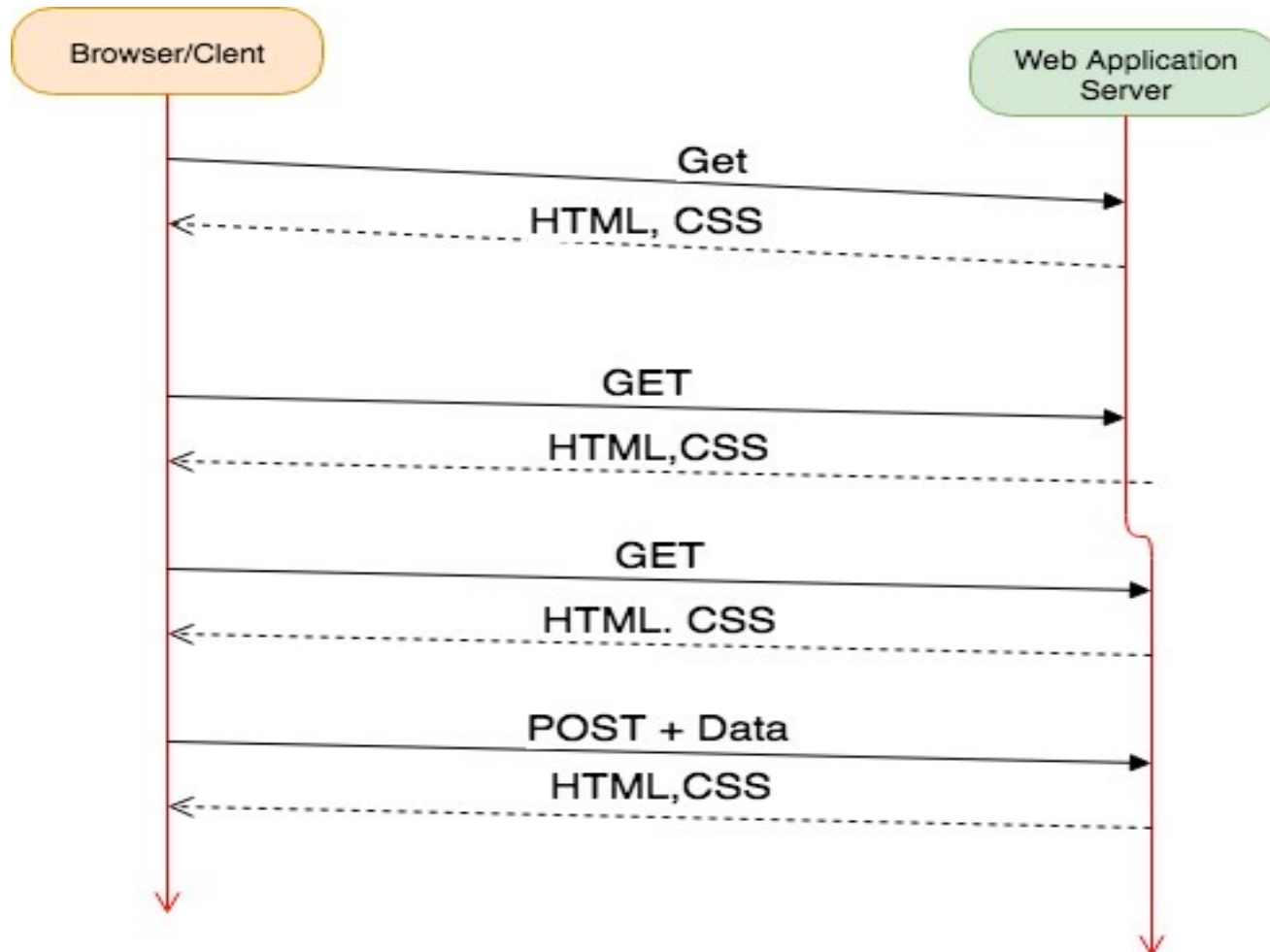
Traditional Web Apps – Architecture



Traditional Web Apps – Sub-system roles.



Traditional Web Apps – HTTP Communication flow.



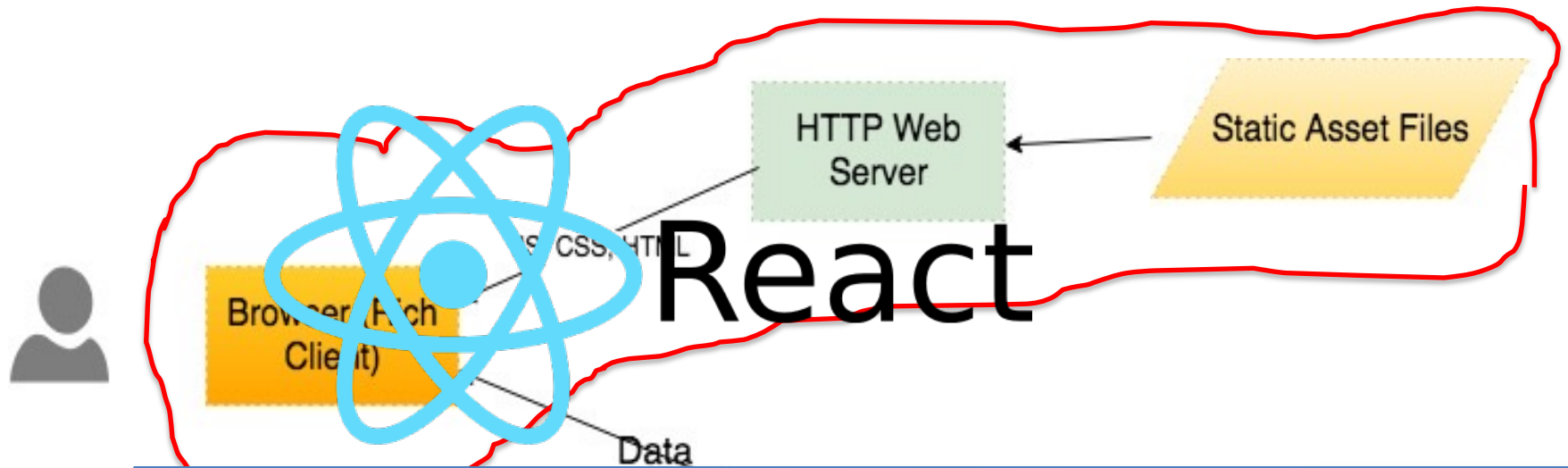
Modern Web Apps.

1. **Early Examples: Gmail (2004), YouTube (1st generation)**
 - **Disadvantage:**
 - **Poor developer experience (DX) – code bloat; poor maintainability; browser inconsistencies.**
 - **Lacked addressability (Key principle of the web).**
2. **Jquery – A cross-platform JavaScript library to simplify the client-side scripting of HTML pages. (2006)**
 - **Adv.: Better developer productivity;**
 - **Reduced code bloat**
 - **Cross-browser**
 - **Disadvantages –**
 - **Lacked Addressability.**
 - **Poor code maintainability (spaghetti code).**
3. **Single Page App (SPA) *frameworks*. (2010 ish)**
 - **Support addressability; Improved DX; Improved maintainability.**

Agenda

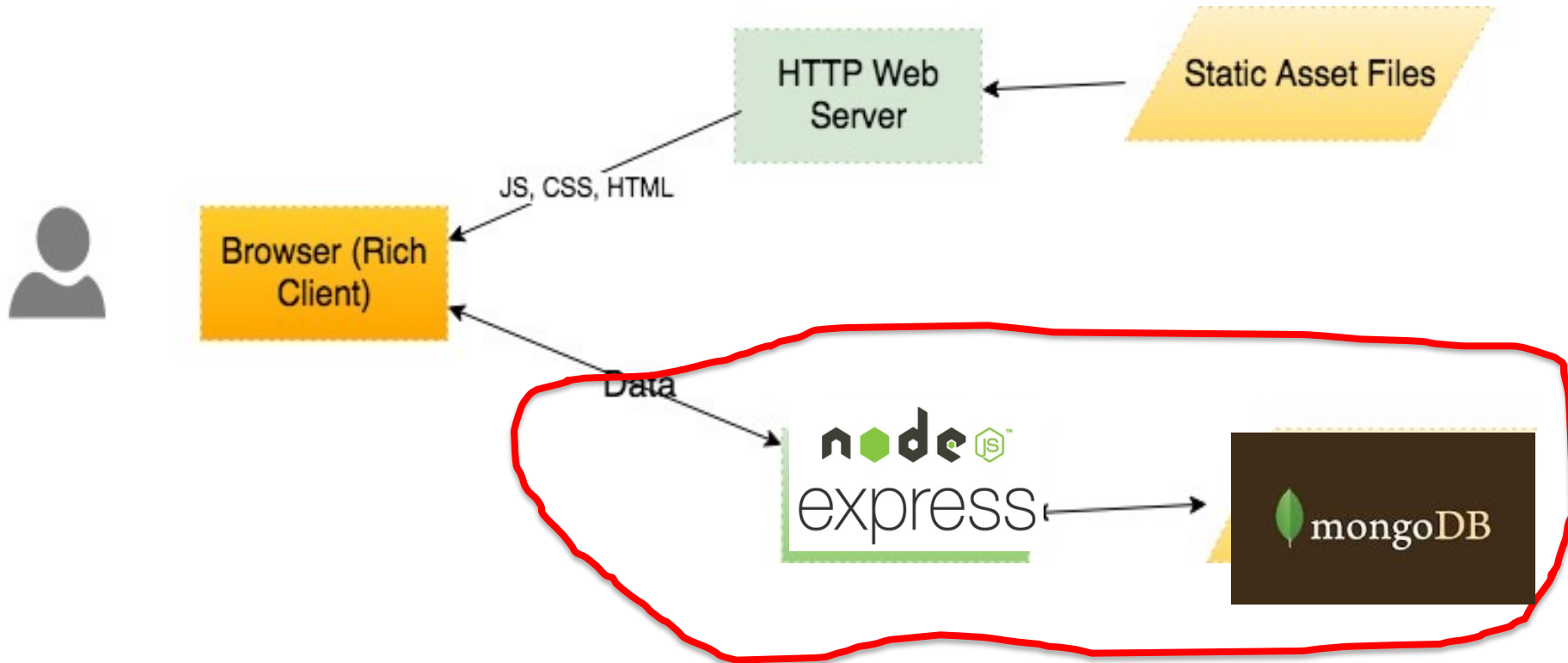
- Context. ☒
- This module's focus

Modern Web Apps

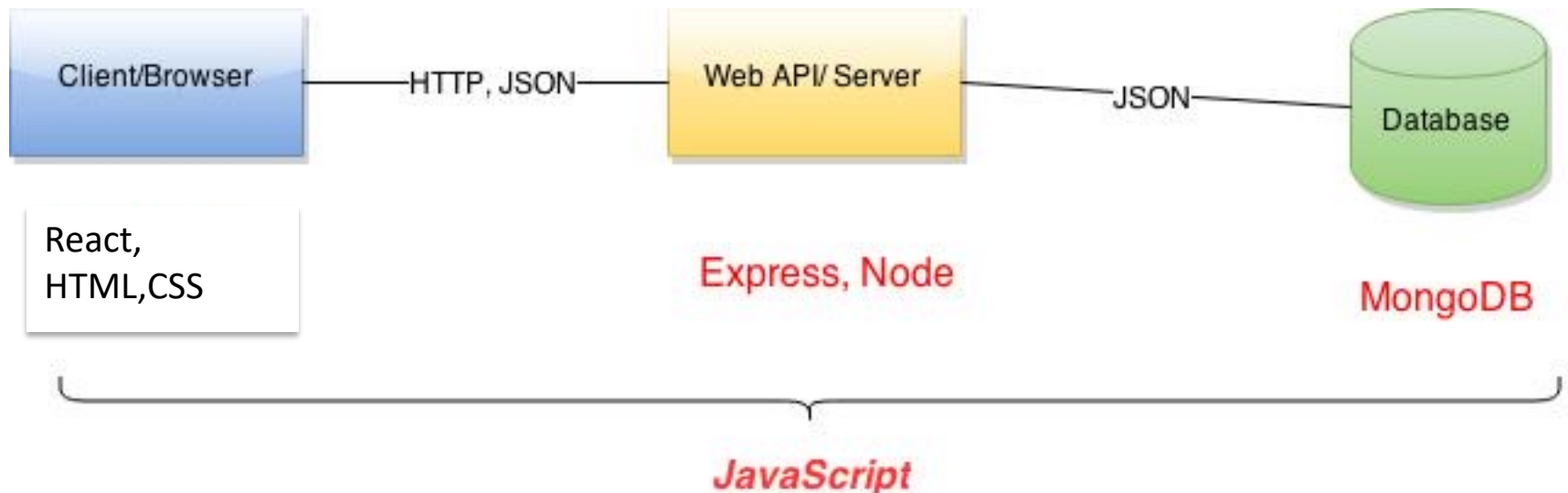


A JavaScript library for building user interfaces

Modern Web Apps



Modern Web App architecture.



The **MERN** stack. (Mongo, Express, React, Node)

Agenda

- Context. ☒
- This module's focus
 - Single Page Apps, using React ☒
 - Web APIs, using Node and MongoDB ☒
- Software Installation Requirements

Node.js

(A JavaScript runtime platform)

The screenshot shows the Node.js website with a browser address bar at the top displaying 'nodejs.org/en/'. The navigation bar includes links for HOME, ABOUT, DOWNLOADS, DOCS, GET INVOLVED, SECURITY, CERTIFICATION, and NEWS. The main content area states 'Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.' Below this is a dark grey box with the text '#BlackLivesMatter'. A light green banner reads 'New security releases are available'. Under the heading 'Download for macOS (x64)', there are two green buttons: '12.18.4 LTS Recommended For Most Users' and '14.12.0 Current Latest Features'. A red box with the text 'You must pick this version or slightly lower' has a red arrow pointing to the '12.18.4 LTS' button. At the bottom, there is a footer with the OpenJS Foundation logo and text, and links to report issues or get help.

nodejs.org/en/

node

HOME | ABOUT | DOWNLOADS | DOCS | GET INVOLVED | SECURITY | CERTIFICATION | NEWS

Node.js® is a JavaScript runtime built on [Chrome's V8 JavaScript engine](#).

#BlackLivesMatter

New security releases are available

Download for macOS (x64)

12.18.4 LTS
Recommended For Most Users

14.12.0 Current
Latest Features

[Other Downloads](#) | [Changelog](#) | [API Docs](#) [Other Downloads](#) | [Changelog](#) | [API Docs](#)

Or have a look at the [Long Term Support \(LTS\) schedule](#).

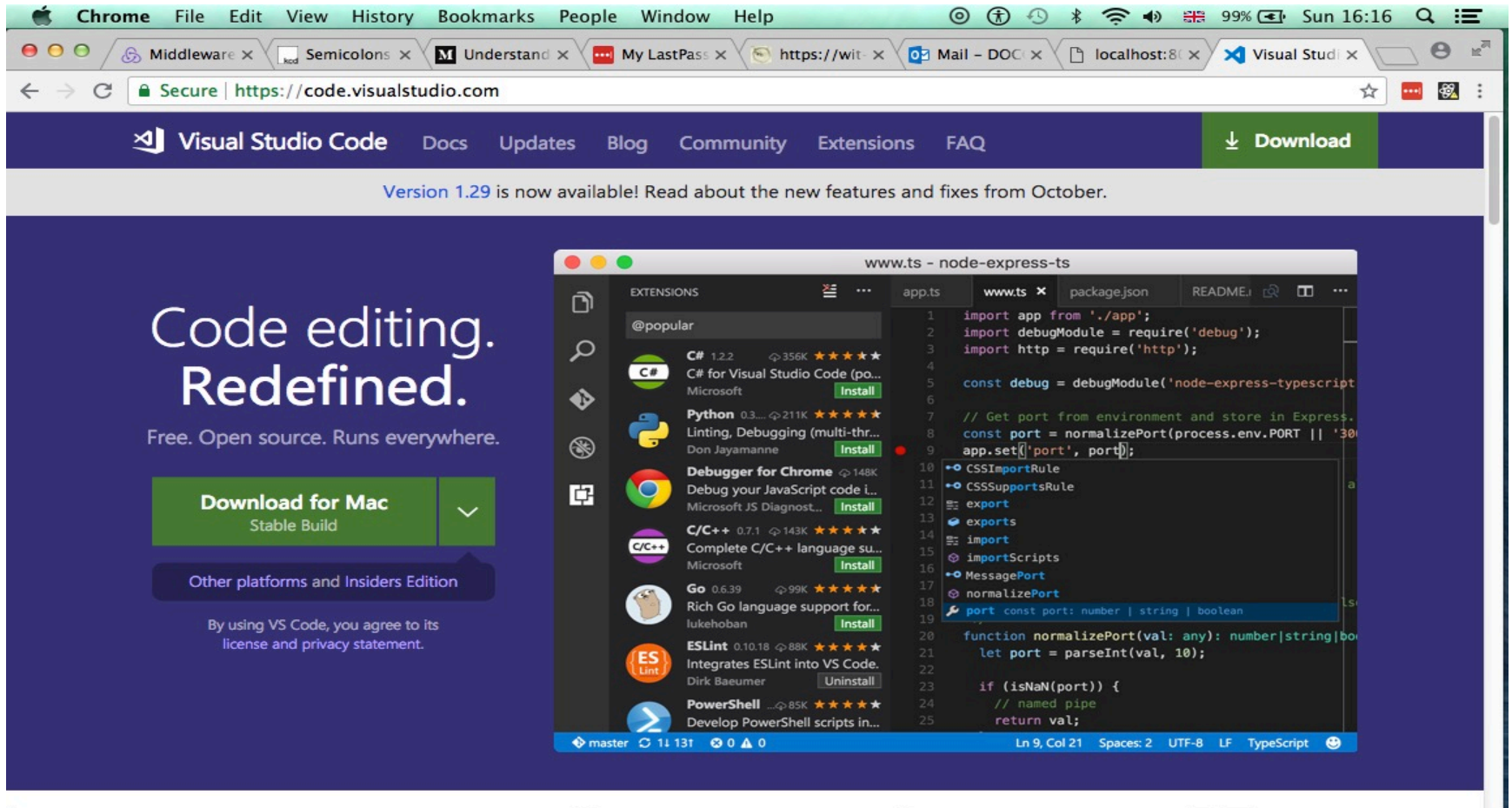
OpenJS Foundation

[Report Node.js issue](#) | [Report website issue](#) | [Get Help](#)

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Text Editor

(Not a heavyweight IDE, thankfully)



Source Control (Git)

The screenshot shows a web browser window with the URL <https://www.atlassian.com/git/tutorials/install-git>. The page is titled "Install Git" and features a sidebar with navigation links: "Learn Git", "Beginner", "What is version control", "What is Git", "What is a repository", "What is a commit", "What is a branch", "What is a pull request", "What is a merge", "What is a fork", "What is a repository", "What is a commit", "What is a branch", "What is a pull request", "What is a merge", "What is a fork". The main content area displays the title "Install Git" and a list of links: "Install Git on Mac OS X / Install Git on Windows / Install Git on Linux". A cookie banner is visible at the bottom of the page.

Chrome File Edit View History Bookmarks People Window Help 96% Sat 08:41

Redux WakaTime · Open source p VS Code Can Do That?! VS Install Git | Atlassian Git Tu

Secure | <https://www.atlassian.com/git/tutorials/install-git>

Apps React CD/CI Reactive Programming Mobile Web Ruby on Rails Tut... How to install Xco... Other Bookmarks

ATLASSIAN Bitbucket Tutorials Enter Your Email For Git News

Learn Git

Beginner

- What is version control
- What is Git
- What is a repository
- What is a commit
- What is a branch
- What is a pull request
- What is a merge
- What is a fork

Install Git

Install Git on Mac OS X / [Install Git on Windows](#) / [Install Git on Linux](#)

There are several ways to install Git on a Mac. In fact, if

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<https://www.atlassian.com/git/tutorials/install-git#windows>

Create a GitHub account

The screenshot shows a web browser at the URL `github.com/diarmuidoconnor`. The GitHub navigation bar is at the top with links for Pulls, Issues, Marketplace, and Explore. The user's profile is displayed on the left, featuring a circular profile picture of a man with glasses and the name **Diarmuid O Connor** with the username `diarmuidoconnor` below it. An **Edit profile** button is located under the name. To the right of the profile, the **Overview** tab is selected, showing a section for **Popular repositories**. A red rectangular box with the text **Must be your name as recorded on Moodle** is overlaid on the repository list, with a red arrow pointing from the box to the user's name. The repository list includes `gitlab-cicd-demo`, `selenium-webdriver-tests`, `cicdDemo`, `diarmuidoconnor.github.io`, `public-site`, and `donationsSPA`. The browser's taskbar at the bottom shows a Teams icon and the file `osx.pka`.

github.com/diarmuidoconnor

Search or jump to... Pulls Issues Marketplace Explore

Overview Repositories 14 Projects Packages

Popular repositories

Customize your pins

Diarmuid O Connor
diarmuidoconnor

Edit profile

Must be your name as recorded on Moodle

gitlab-cicd-demo
JavaScript

selenium-webdriver-tests
JavaScript

cicdDemo
JavaScript

diarmuidoconnor.github.io
CSS

public-site
HTML

donationsSPA
JavaScript

Teams osx.pka

Show all

Summary.

- **Two models of web apps:**
 - **Traditional – Server Side Rendering (SSR)**
 - **Modern – Client Side Rendering (CSR)**
- **CSR model has evolved:**
 - **Unmaintainable JS codebase to SPA framework based codebase.**
 - **No addressability to addressable.**
- **Server-side:**
 - **From SSR web applications to Web APIs.**
 - **REST style interface.**
- **NoSQL databases.**

Assessment.

- **100% continuous assessment.**
 - **20-25% lab work submissions.**
 - **75-80% - projects:**
 - **React SPA (40%)**
 - **(Integrated) Web API (40%)**

