



Waterford Institute of Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Module: Web App Development 2

Overview

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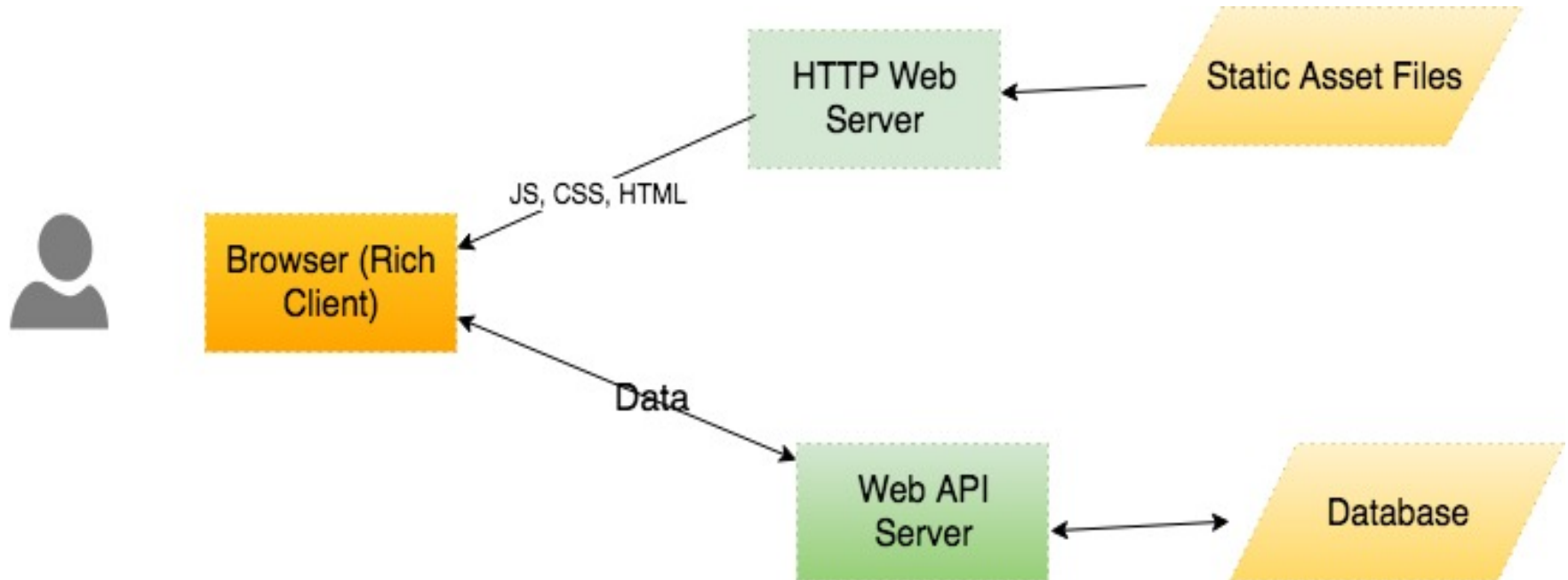
TL;DR

**Design and develop modern, secure
Web apps using Agile practices**

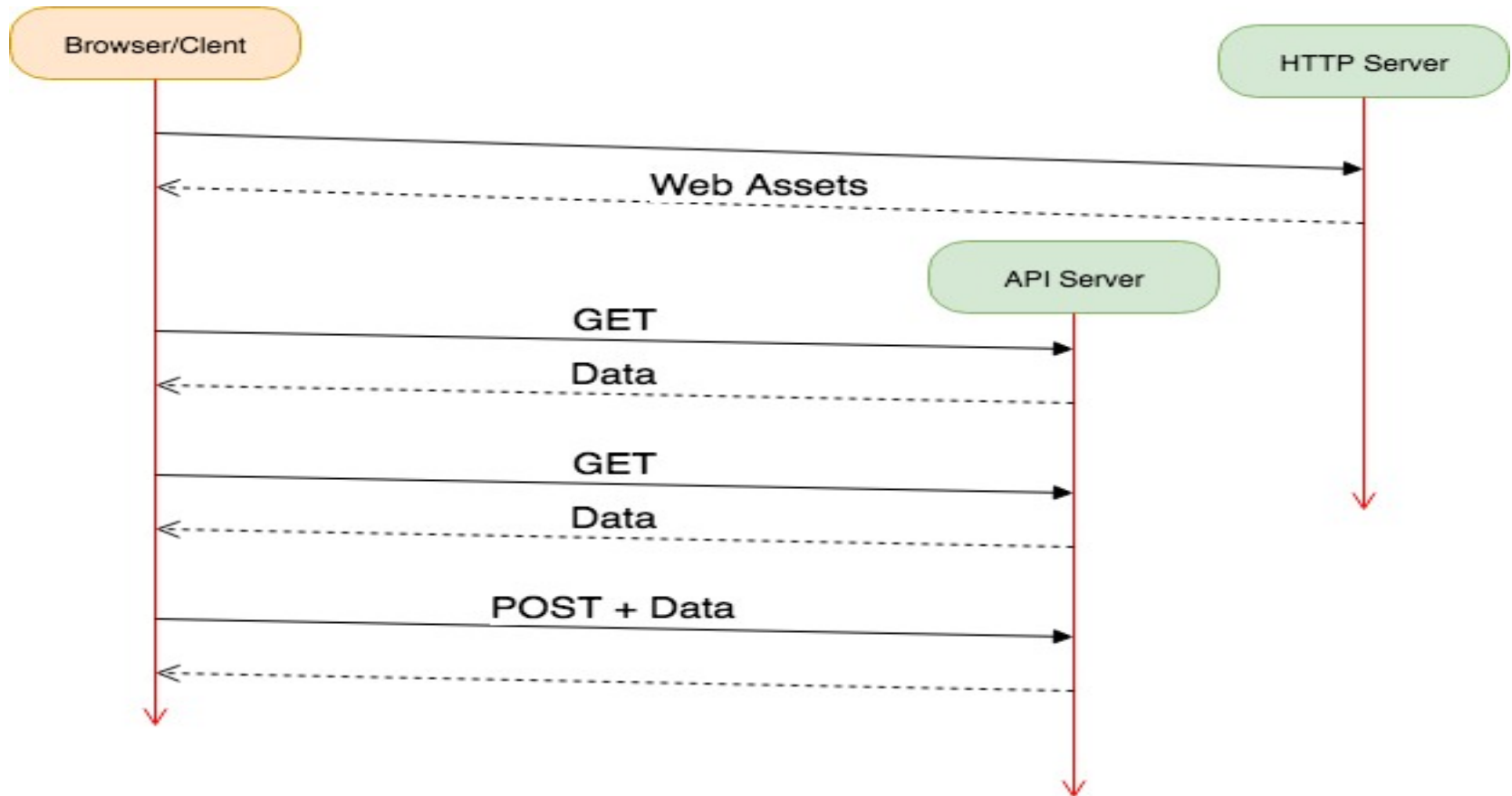
Agenda

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

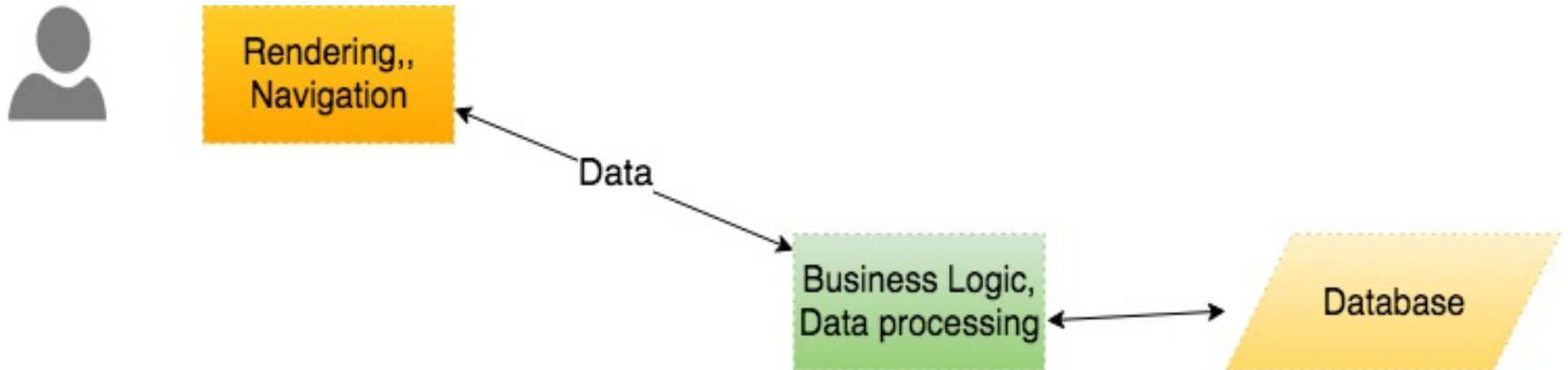
Modern Web Apps - Architecture



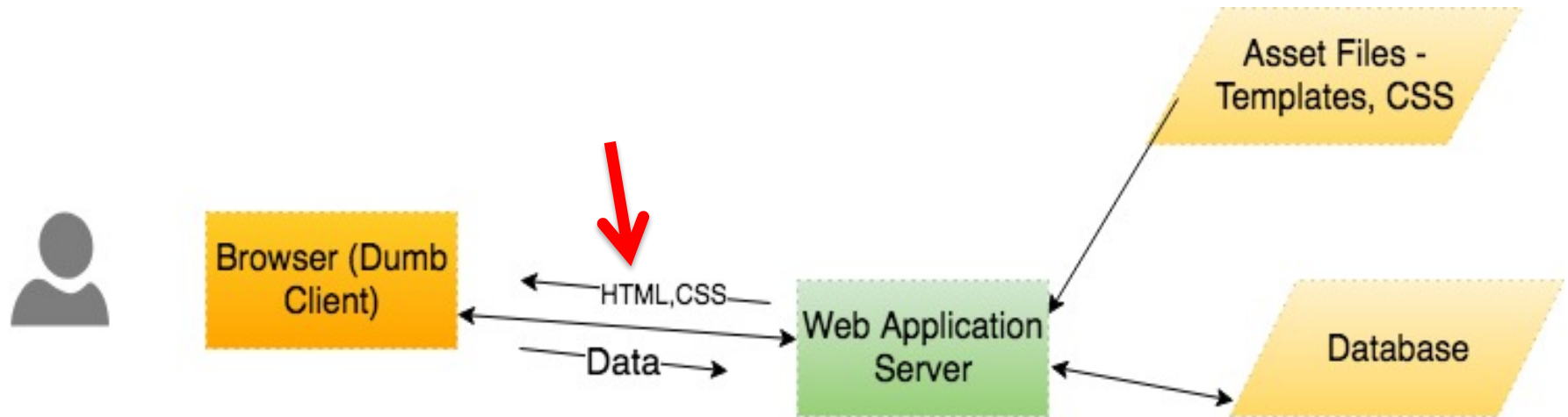
Modern Web Apps – HTTP Communications flow



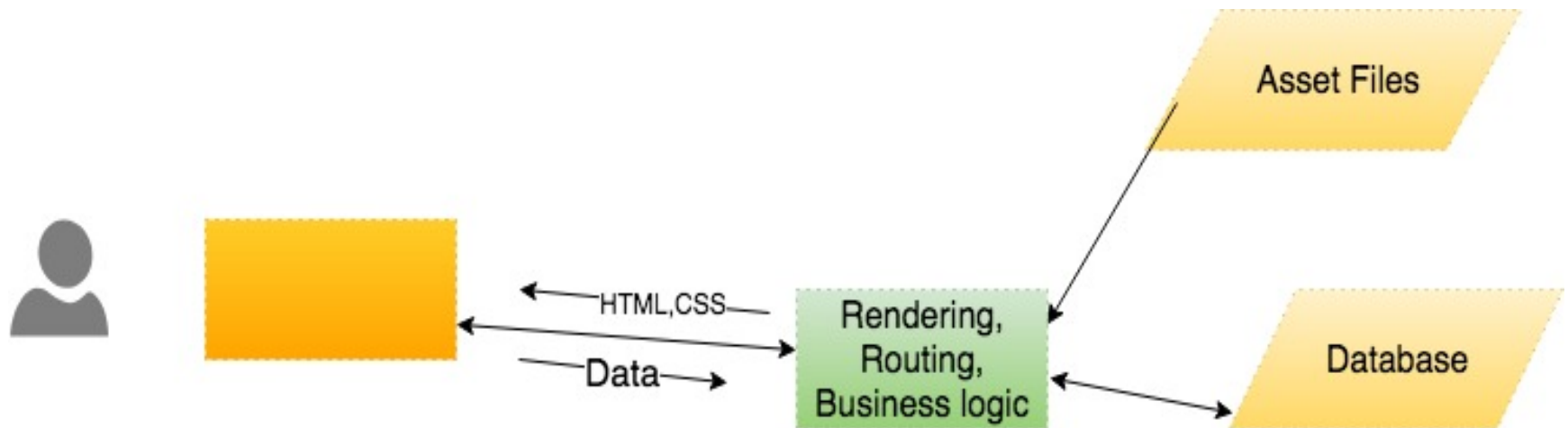
Modern Web Apps – Sub-system roles



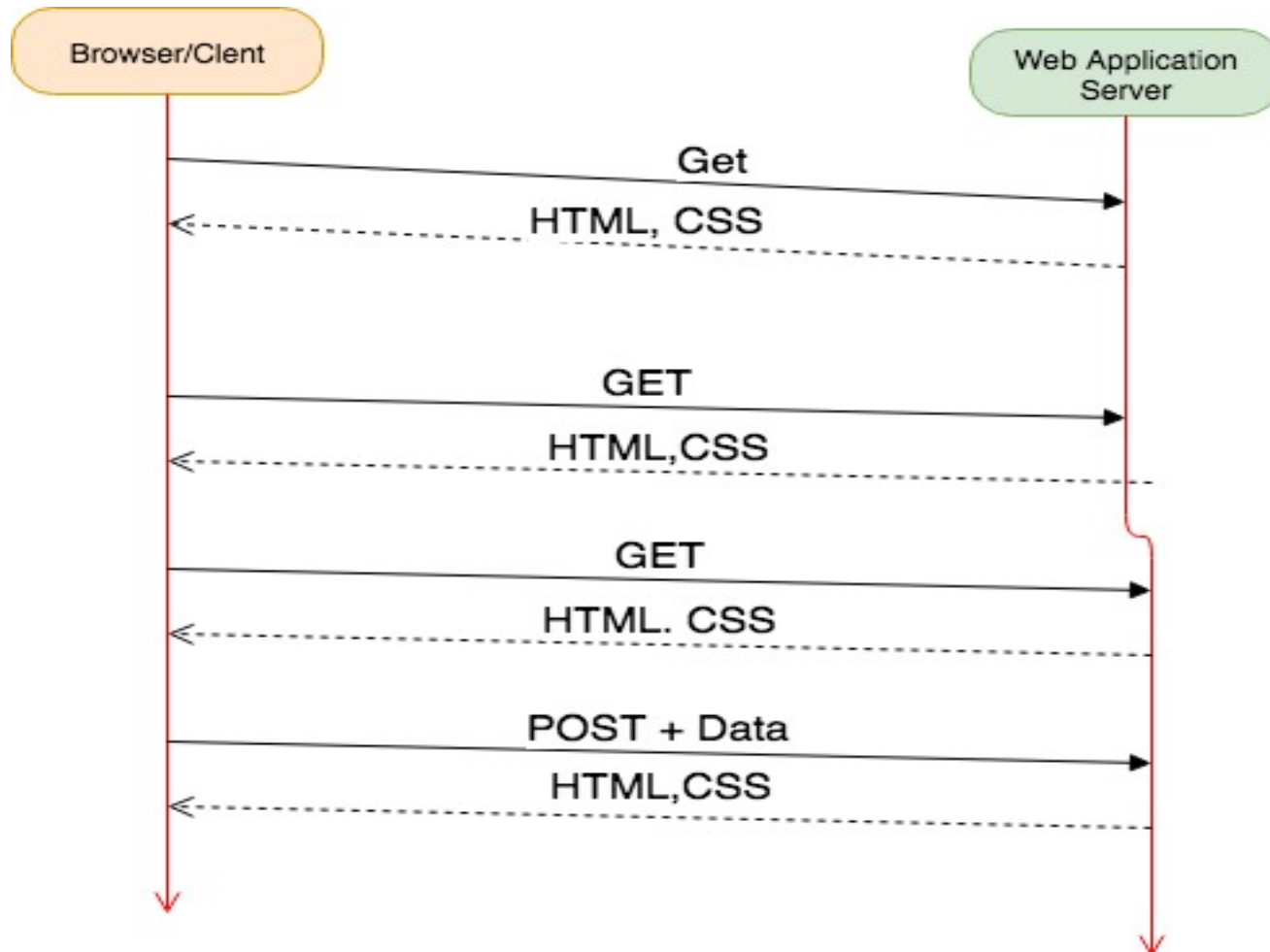
Traditional Web Apps – Architecture



Traditional Web Apps – Sub-system roles.



Traditional Web Apps – HTTP Communication flow.



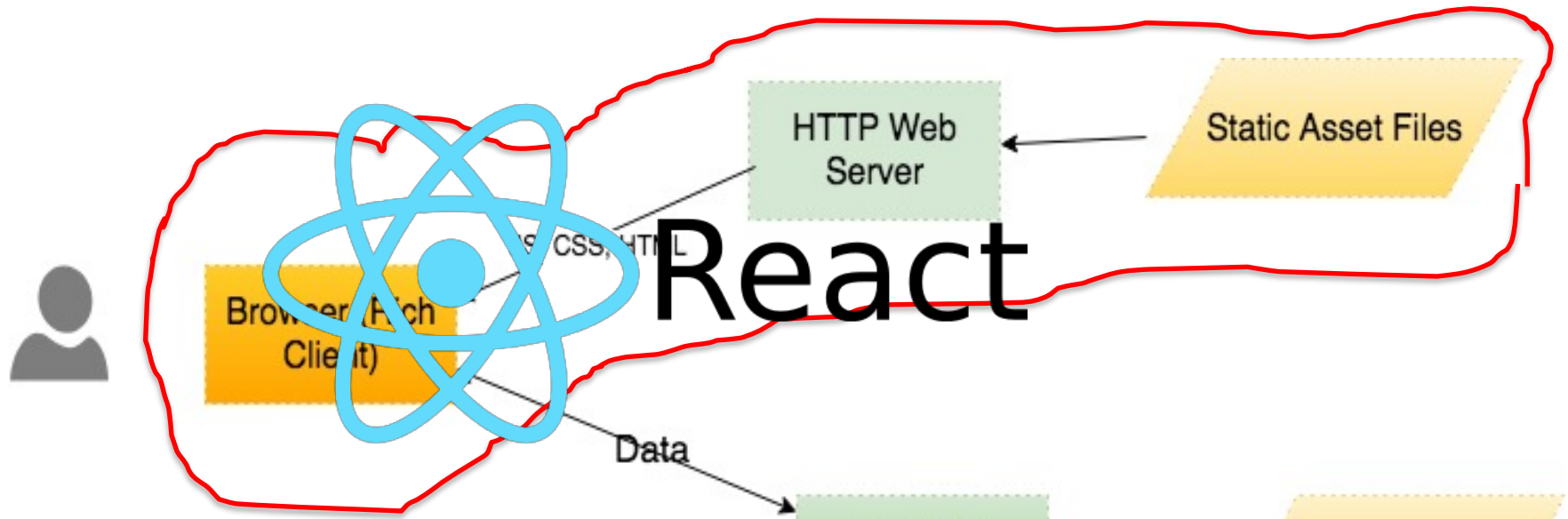
Modern Web Apps.

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

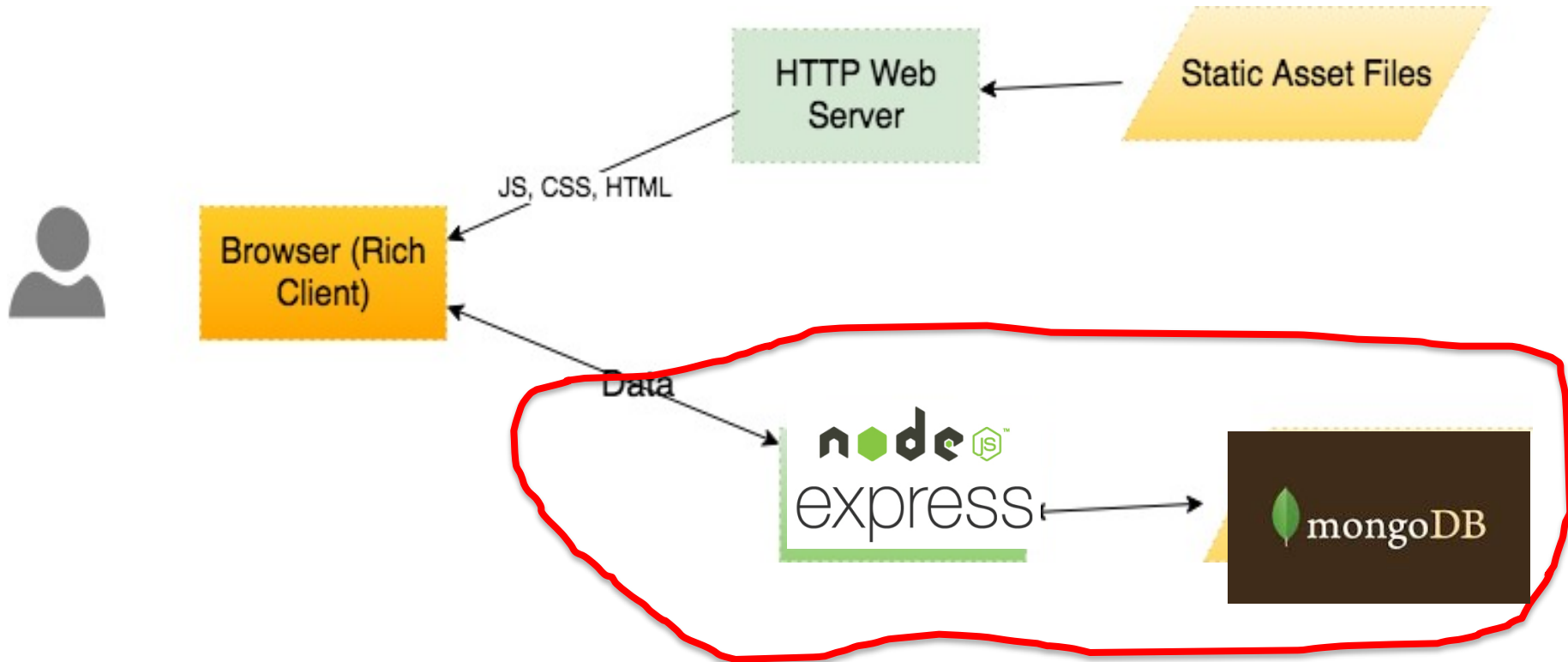
- Context. ☒
- This module's focus

Modern Web Apps

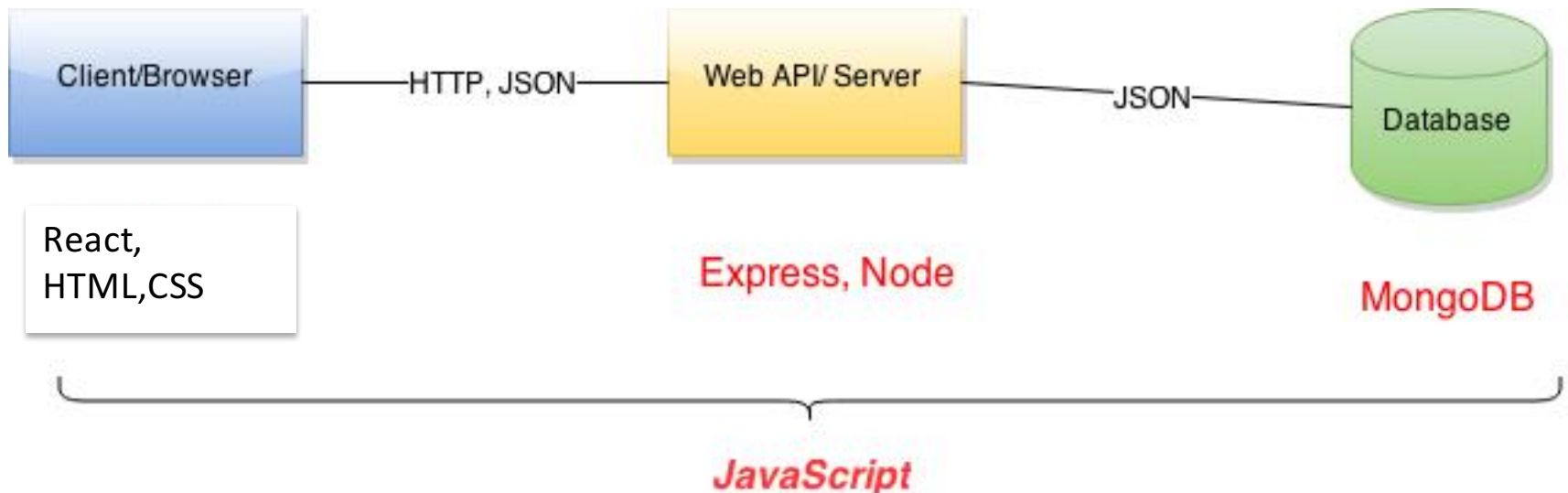


A JavaScript library for building user interfaces

Modern Web Apps



Modern Web App architecture.

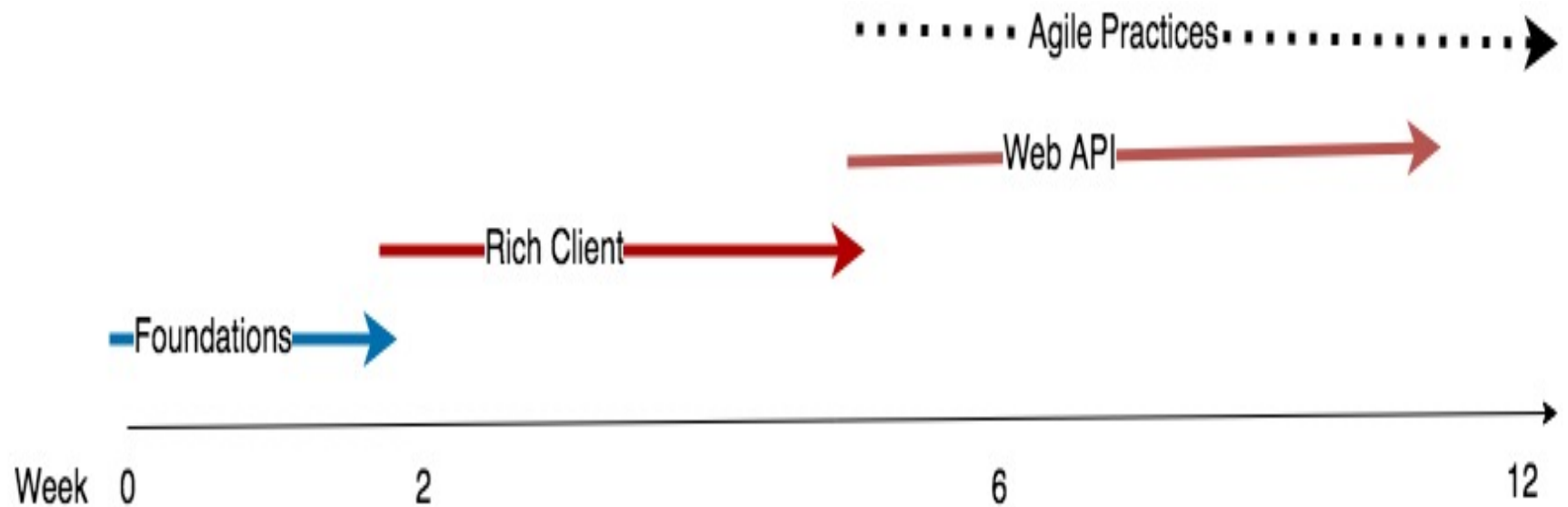


The **MERN** stack. (Mongo, Express, React, Node)

Agenda

- Context. ☒
- This module's focus
 - Single Page Apps, using React ☒
 - Web APIs, using Node and MongoDB ☒
 - Related Agile support tasks: ☒
 - E.g. Automated testing,
- Software Installation Requirements

Outline schedule

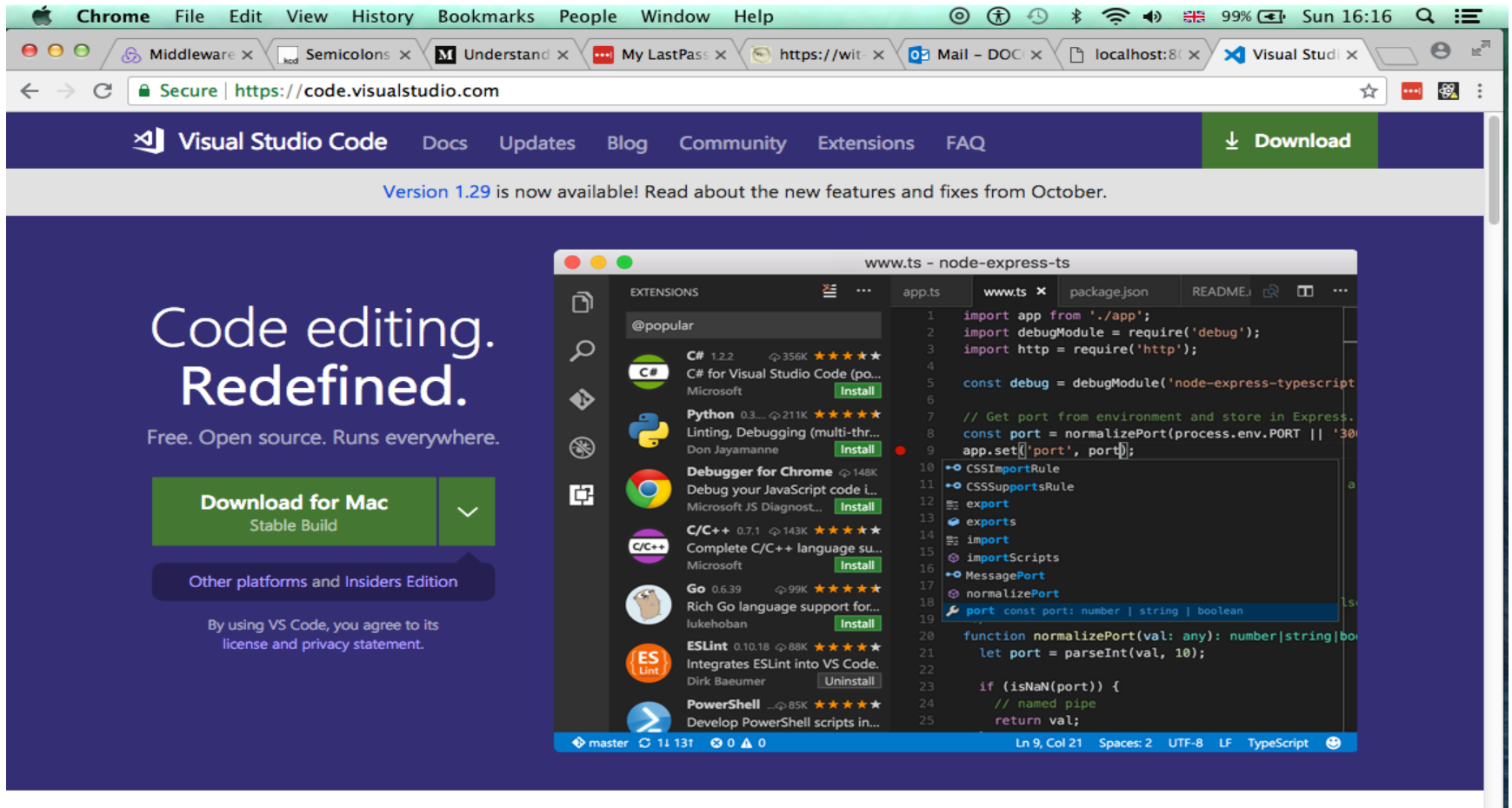


Agenda

- Context. ☒
- This module's focus
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 - Web APIs, using Node and MongoDB ☒
 - Related Agile support tasks: ☒
 - E.g. Automated testing, Source control
- Software Installation Requirements

Text Editor

(Not a heavyweight IDE, thankfully)



Node.js

(A JavaScript runtime platform)

Chrome File Edit View History Bookmarks People Window Help

Middlew x Semicolo x Understa x My LastP x https://w x Mail - D x localhost x Node.js x Storyboo x

Secure | https://nodejs.org/en/

node

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Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

November 2018 security releases available, upgrade now

Download for macOS (x64)

10.14.1 LTS
Recommended For Most Users

11.x Current

Other Downloads | Changelog | API Docs

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

Sign up for [Node.js Everywhere](#), the official Node.js Monthly Newsletter.

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Git

git --distributed-even-if-your-workflow-isnt

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient **staging areas**, and **multiple workflows**.

 **Learn Git in your browser for free with Try Git.**

About
The advantages of Git compared to other source control systems

Documentation
Command reference pages, Pro Git book content, videos and more

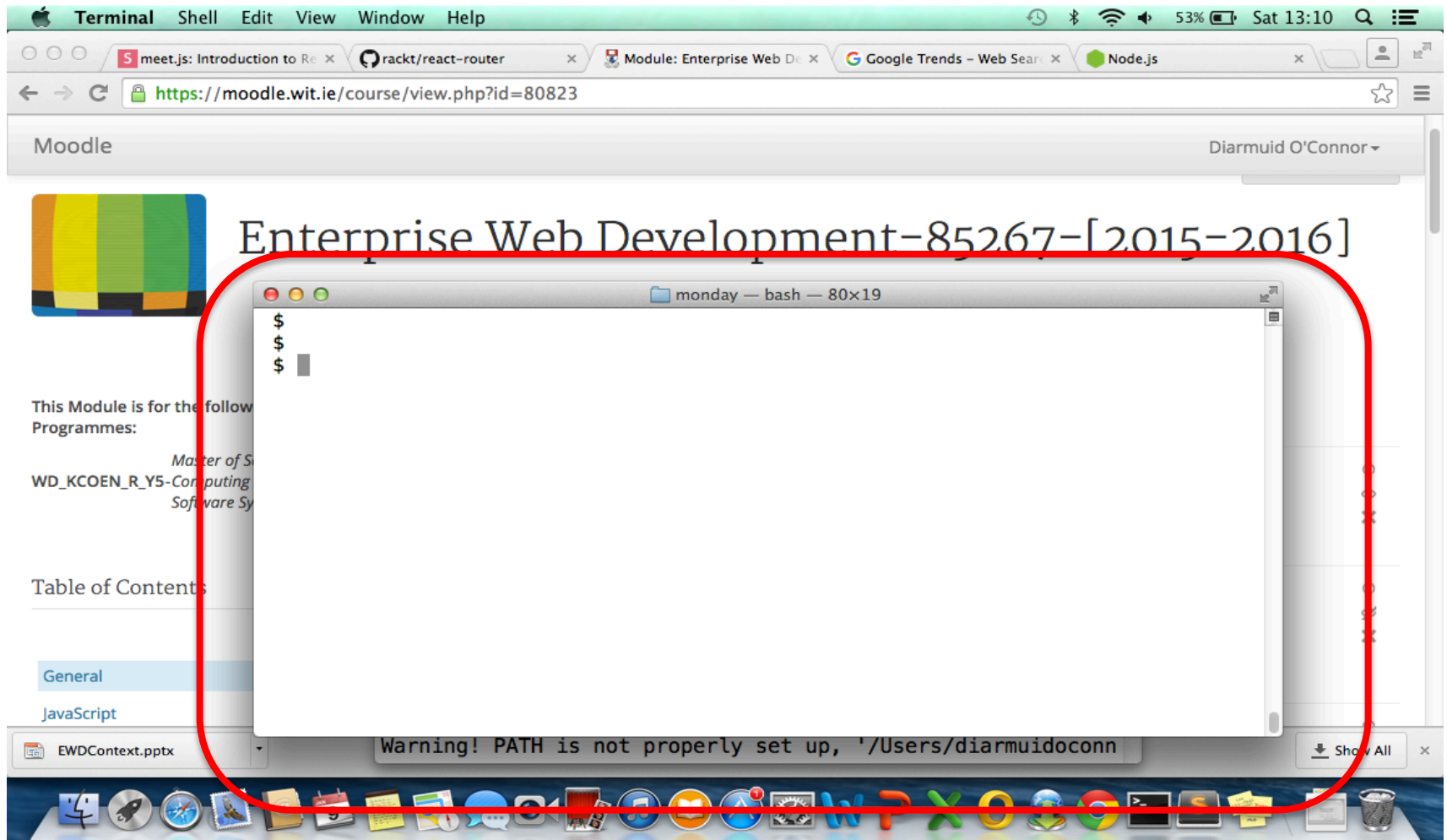
Latest source Release 2.15.1

Line 33, Column 76
51 console.log(acar.owner + " drives a " + acar.type.make);
52
35 misspelled words Spaces: 4 Markdown

GUI clients and binary releases for all major platforms.

Get involved! Bug reporting, mailing list, chat, development and more

DOS/Terminal window.



DOS commands

- The cd command (Change directory)

`$ cd` *(Show pathname of my current directory)*

`c:\Users\diarmuid`

`$ cd webdev` *(Relative pathname)*

`$ cd c:\Users\diarmuid\webdev` *(Absolute pathname)*

`$ cd ..` *(c:\Users\diarmuid)*

`$ cd webdev\lab01` *(c:\Users\diarmuid\webdev\lab01)*

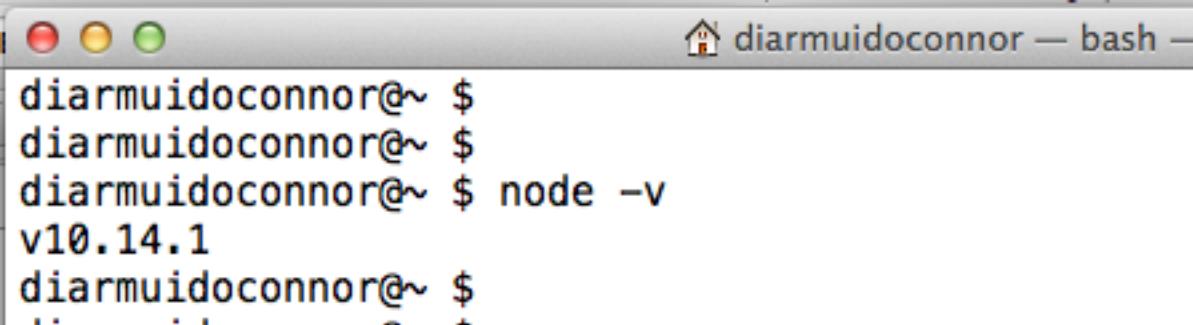
`$ cd ../lab02` *(c:\Users\diarmuid\webdev\lab02)*

`$ cd ../..` *(c:\Users\diarmuid\)*

\$ represents the terminal prompt – not part of command.

DOS commands

- To check node.js installation using DOS terminal:

A screenshot of a macOS terminal window. The title bar shows three colored window control buttons (red, yellow, green) on the left and a home icon followed by the text 'diarmuidoconnor — bash —' on the right. The terminal content shows a series of commands and their outputs: the prompt 'diarmuidoconnor@~ \$' is shown three times. The third time, the command 'node -v' is entered, and the output 'v10.14.1' is displayed. Below the last prompt, there are some stray characters: two dots, two more dots, an underscore, and a plus sign.

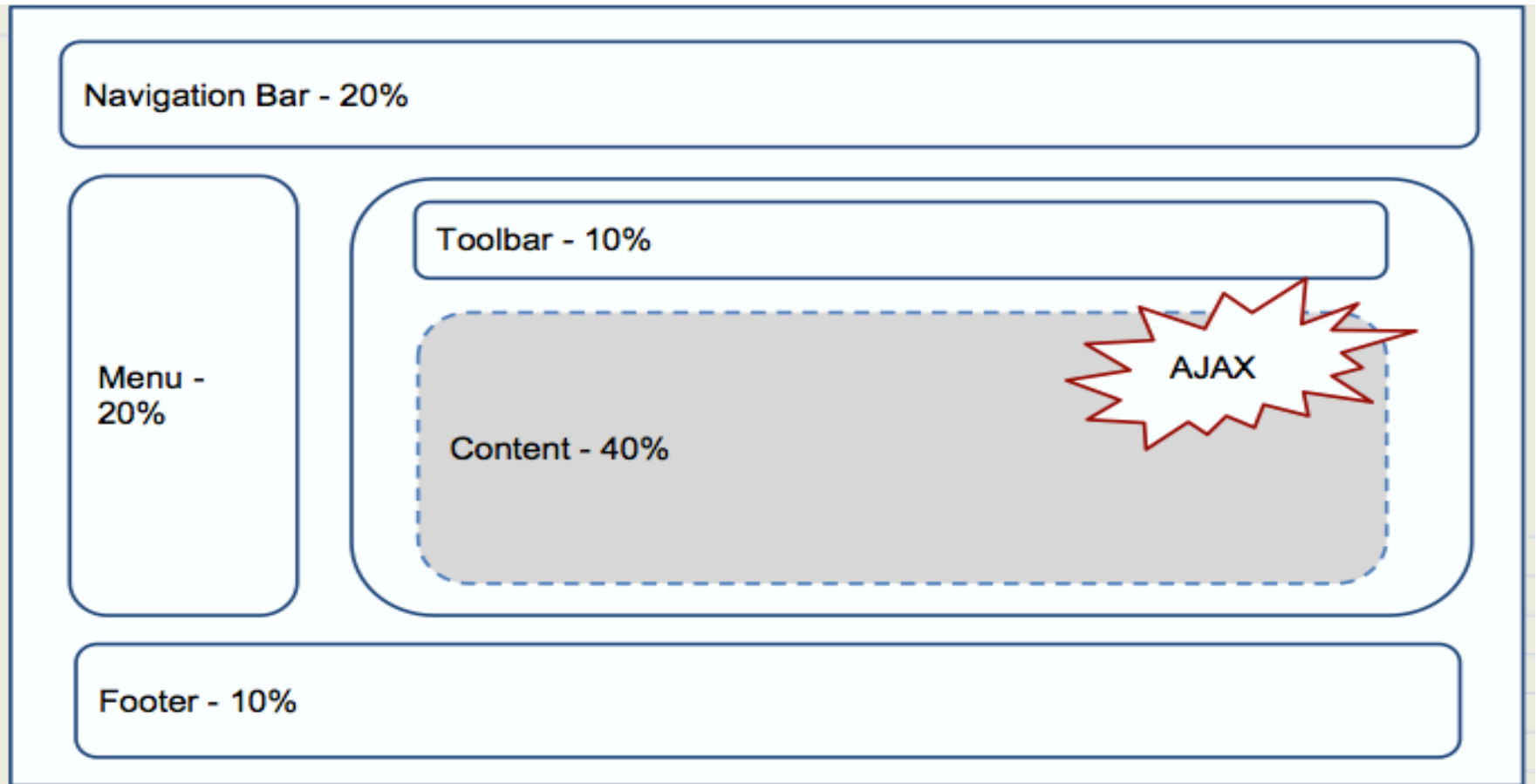
```
diarmuidoconnor@~ $  
diarmuidoconnor@~ $  
diarmuidoconnor@~ $ node -v  
v10.14.1  
diarmuidoconnor@~ $  
.. .. _ +
```

- Your version may be slightly newer.

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.**
- **Agile development processes.**

Web Evolution - AJAX.



Static

Dynamic