Project: Lightning

Team: Winners

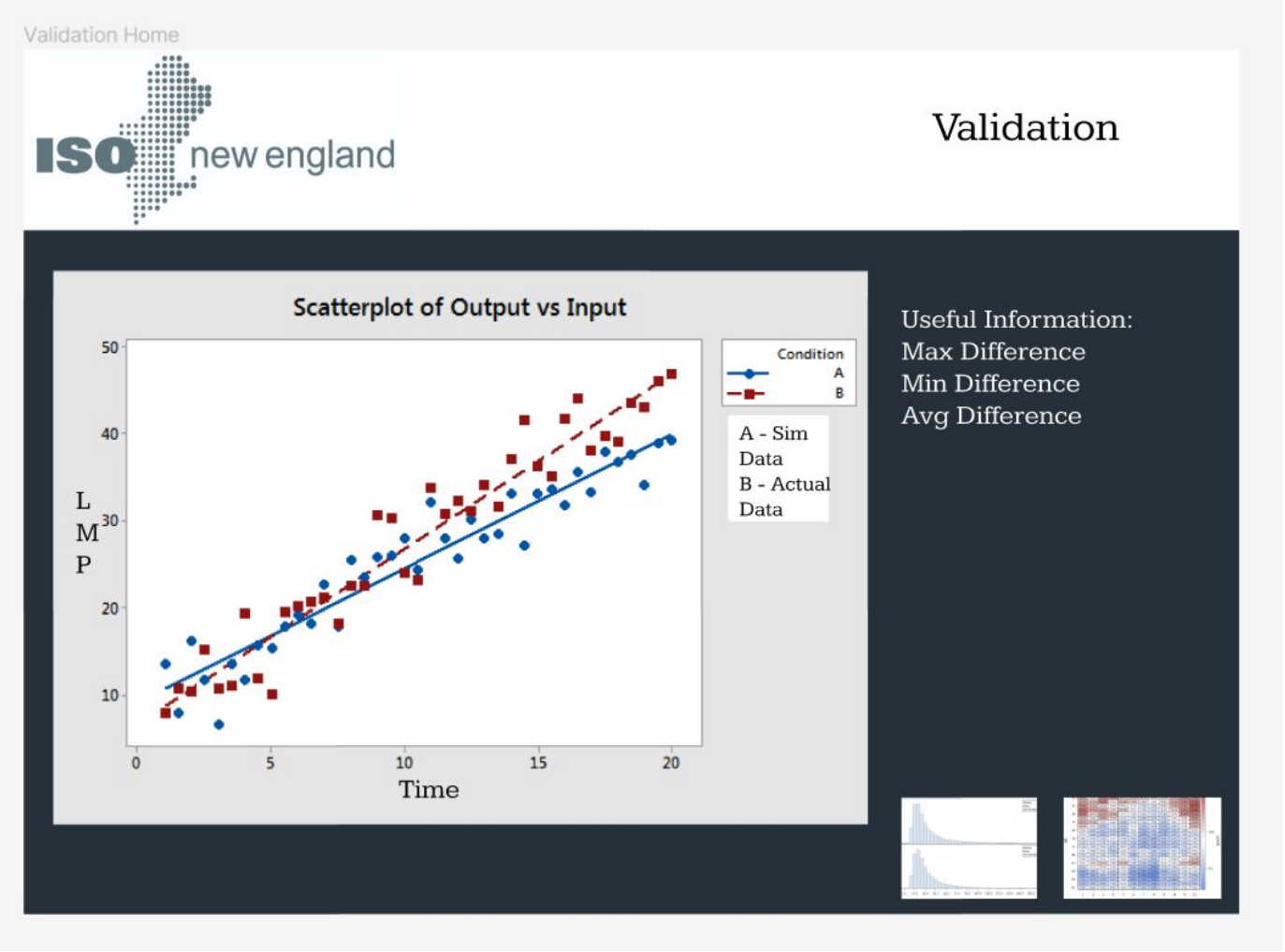
Atif Abedeen & Aadit Bhatia

Front-end Progress

Figure 1:
Front Page

Figure 2: Page when you click Validation

Figure 3: Highlighting a certain graph



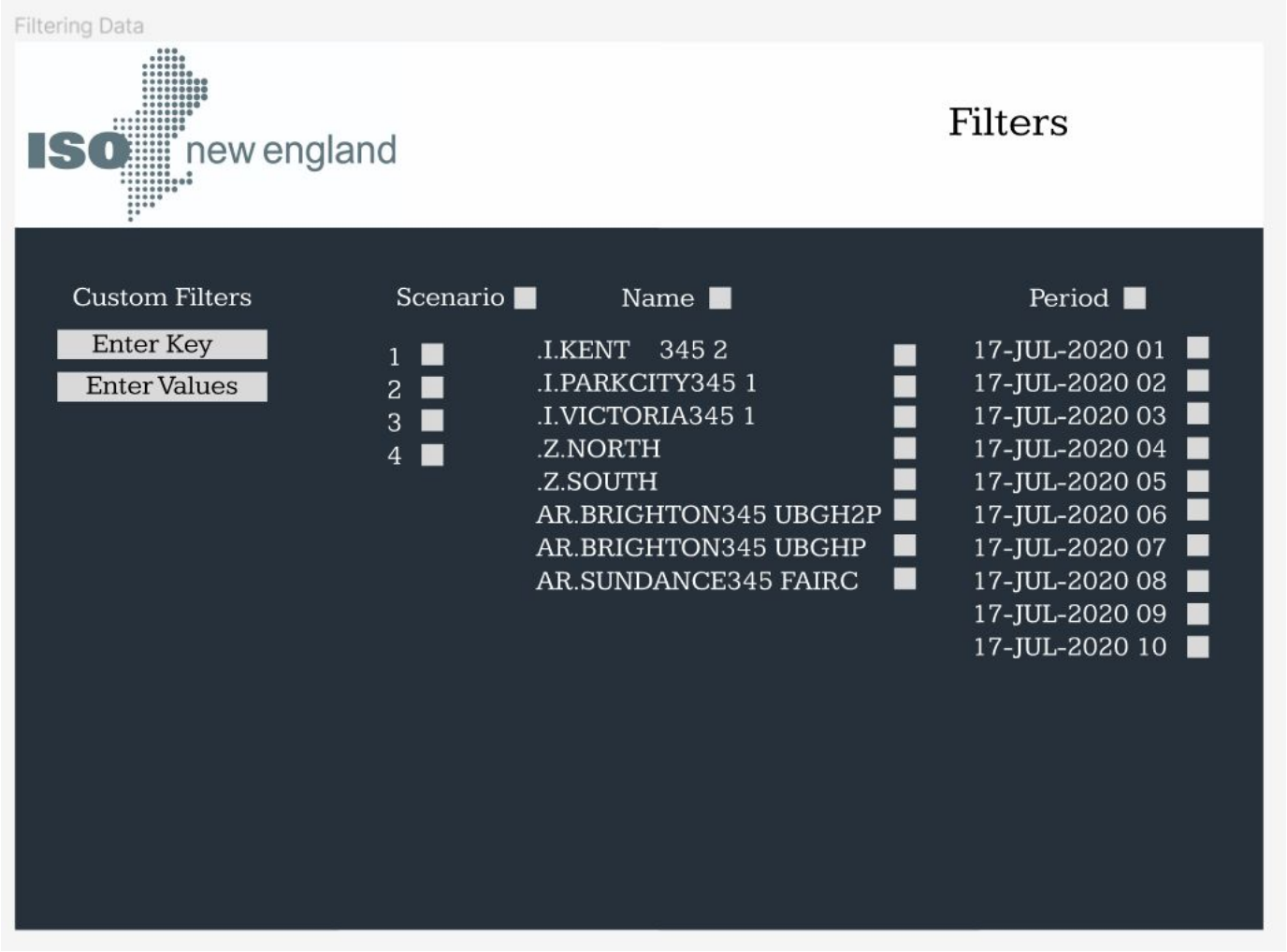
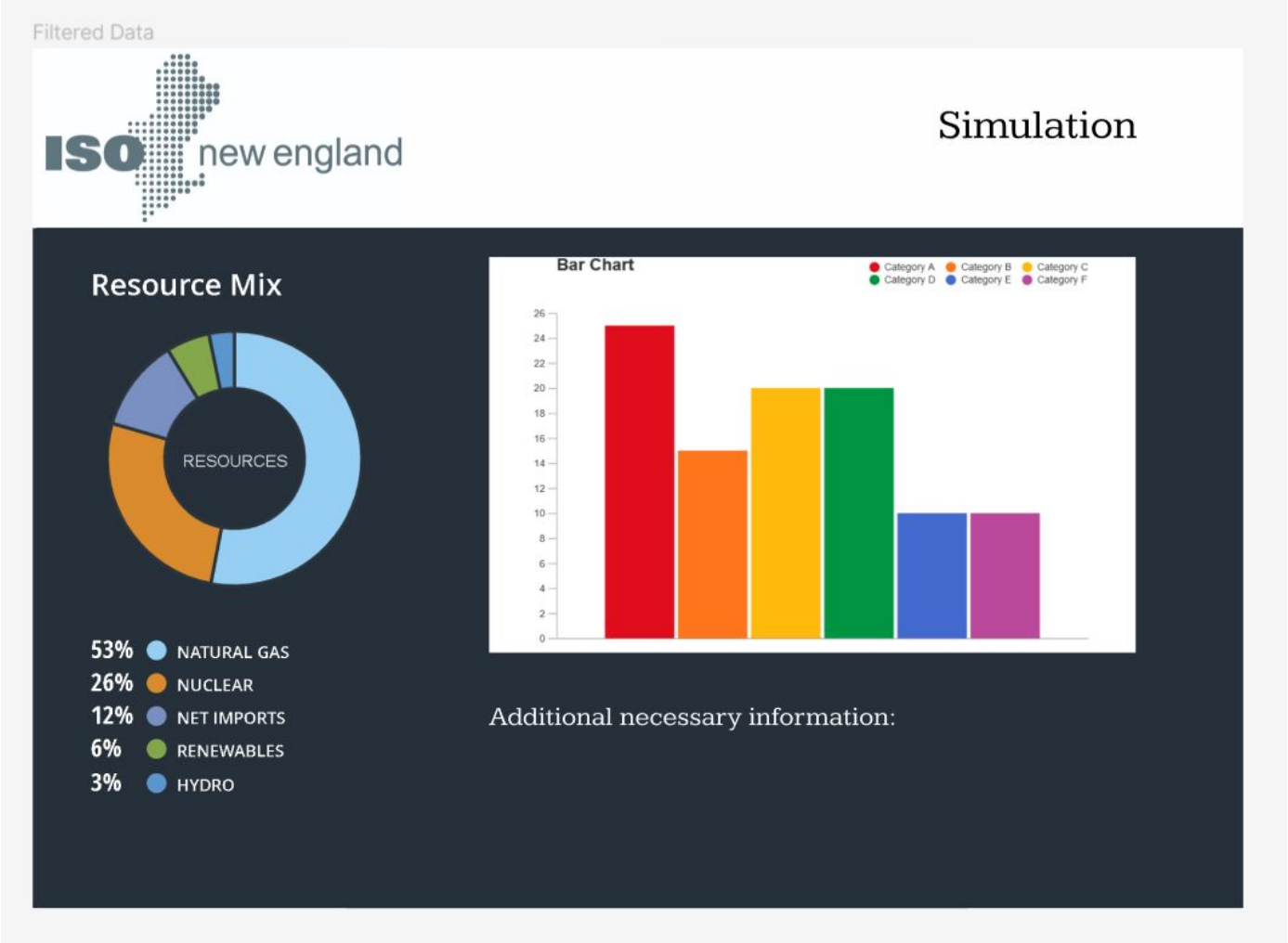


Figure 4: Filters for Simulation

Figure 5: Simulation page created based on filters selected



Some Library Changes…

- We have decided to use **HighCharts** instead of **Charts.js** or **Next.js**
- In HighCharts, **template code** for different types of graphs are provided. We just need to integrate the library into our framework.
- Works really well with React. It is just the matter of feeding in the data.

jsfiddle.net/gh/get/library/pure/highcharts/highcharts/tree/master/samples/highcharts/demo/line-basic

Run | Save | Collaborate | Change | Fiddle listing shows latest version | Settings | Sign in

Fiddle meta

Groups EXTRA

Resources URL cdnjs

JavaScript/CSS URL

- Paste a direct CSS/JS URL
- Type a library name to fetch from CDNJS

Async requests

Other (links, license)

HTML

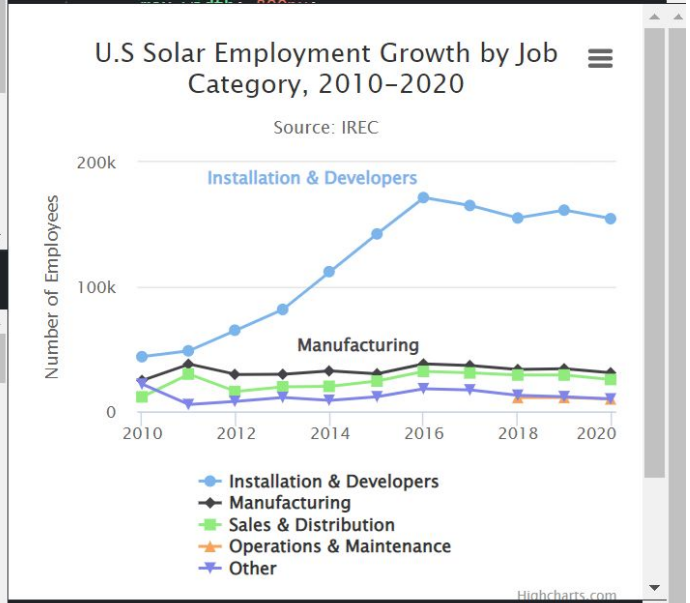
```html
<script src="https://code.highcharts.com/highcharts.js"></script>
<script src="https://code.highcharts.com/modules/series-label.js"></script>
<script src="https://code.highcharts.com/modules/exporting.js"></script>
<script src="https://code.highcharts.com/modules/export-data.js"></script>
<script src="https://code.highcharts.com/modules/accessibility.js">
</script>

<figure class="highcharts-figure">
    <div id="container"></div>
    <p class="highcharts-description">
        Basic line chart showing trends in a dataset. This chart inc
```

JavaScript + No-Library (pure JS)

```javascript
Highcharts.chart('container', {

    title: {
        text: 'U.S Solar Employment Growth by Job Category, 2010-2020'
    },

    subtitle: {
        text: 'Source: <a href="https://irecusa.org/programs/solar-jobs-census/" target="_blank">IREC</a>'
    },

    yAxis: {
        title: {
```

CSS

```css
.highcharts-figure,
.highcharts-data-table table {
    min-width: 360px;
```



Console (beta)

Figure 6: Example of a sample graph and its corresponding code

Backend, Database Progress

- We have the data!! Our team has become familiar with the datasets provided
- Decided on Using **MongoDB** as our Database and **Express + Node JS** for our backend
- Decided on MongoDB as it provides **speed** and **horizontal scalability**.
- Express is a natural choice because it integrates well with MongoDB.

Initial System Architecture

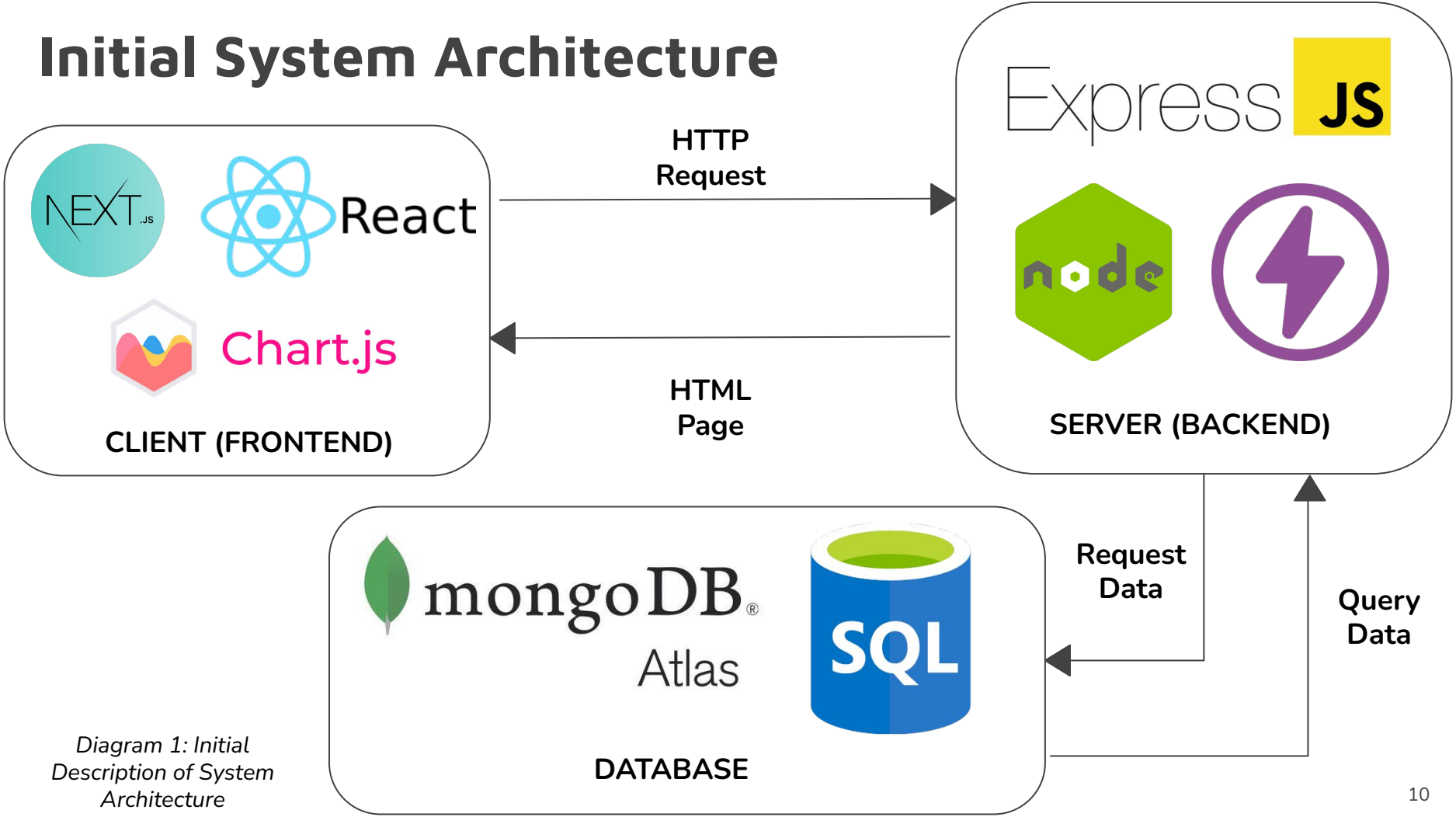


Diagram 1: Initial Description of System Architecture

System Architecture

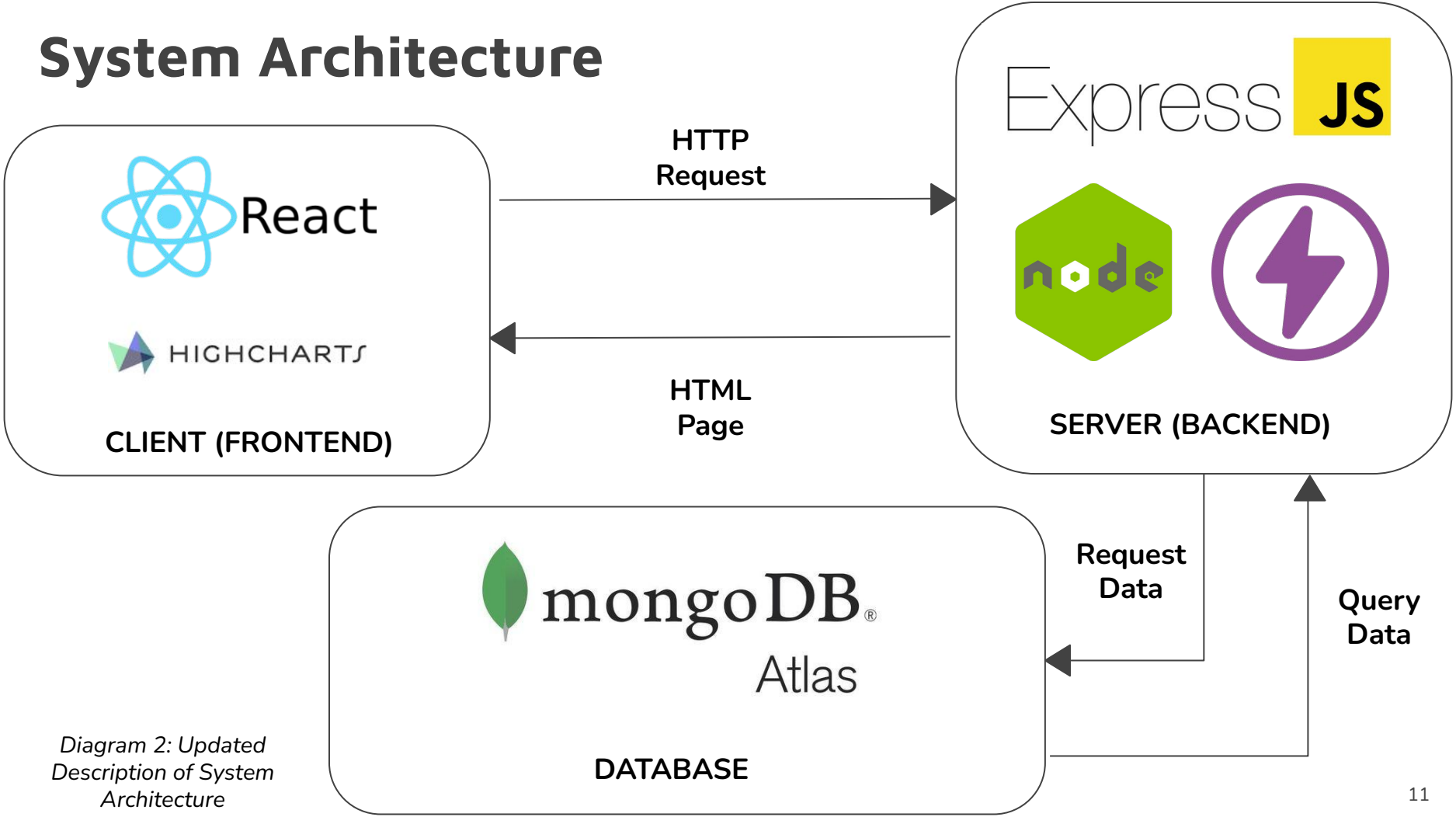


Diagram 2: Updated Description of System Architecture

Front-end goals: One week

- Finish up on the design of the pages in **Figma**
- Get familiar with React, HTML, and CSS.
- Make the basic framework of the pages using HTML, CSS, and JS.

Front-end goals:4 weeks

- Have the pages set up in **React.**
- Make sure that all the different components of the pages have been tested and working properly.
- Have all the different graphs set up and working with some sort of testable data.

Back-end goals for the next week

- Familiarize ourselves with MongoDB
- Coordinate with the front-end team to create an **interface** of the Rest API
- Upload the given datasets on MongoDB
- Learn about **inverted indexes** because we might be using that data structure

Back-end goals 4 weeks

- Create an algorithm which performs all calculations required and sends data to the front-end team for creating graphs

```
const inverted_index = new Map();
const graph_values=[30.18, 30.18, 30.18, 34.02, 30.06, 30.16, 30.14, 30.14, 30.11, 30.06, 30.18, 30.18]
inverted_index.set("LMP_BaseCase", graph_values)

function filtering(request){
    return inverted_index(request);
}
// frontend team will request LMP values for the base case-
// By asking filtering(LMP_BaseCase)
```

Roadblocks:

- We tried to learn next.js and chart.js but it was a bit challenging for us so we decided to switch to HighCharts
- Familiarity & experience of the team with MongoDB
- Understanding behavior of MongoDB with Express and Node JS

Questions?