

# **Traffic and Capacity Analytics for Major Ports**

**Team ID : PNT2022TMID19010**

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# **INTRODUCTION**

## **1.1 Project Overview**

India has been the world's fastest-growing major economy for four of the past five years, due to rising demand for goods and services. The movement of goods across the country and beyond its borders has created economic opportunities for millions of India's citizens. Today, the logistics sector represents five percent of India's Gross Domestic Product (GDP)<sup>1</sup> and employs 2.2 crore people. India handles 4.6 billion tonnes of goods each year, amounting to a total annual cost of INR 9.5 lakh crore. These goods represent a variety of domestic industries and products: 22 percent are agricultural goods, 39 percent are mining products, and 39 percent are manufacturing-related commodities. Trucks and other vehicles handle most of the movement of these goods. Railways, coastal and inland waterways, pipelines, and airways account for the rest. Recognising the critical role of the sector in the country's future, the Government of India (GOI) is pursuing a range of actions to improve its logistics performance. These include the development of dedicated rail-based freight corridors, improvements to the capacity and connectivity of coastal and inland water-based shipping. It is also looking at the buildout of road infrastructure projects such as Bharatmala and the Golden Quadrilateral, and the creation of supportive policies. As national freight activity grows about five-fold by 2050, India's freight transport ecosystem has a critical role to play in supporting India's ambitious priorities. Some of these include international competitiveness, job growth, urban and rural livelihoods, and clean air and environment.

As products are made, they move along a supply chain until they reach the consumer. To move those goods, the logistics sector combines vehicles and warehouses, all of which are selected to efficiently move and process them. The types of vehicles and storage facilities selected are typically based on the type of goods being moved and the distance over which they are being moved. This process of supply chain managers efficiently deploying and using a set of vehicles and warehouses to move goods through the production process to their final use by consumers is critical to the wellbeing of communities and economies.

To sustain the growing demand for freight transport without driving existing externalities to extreme levels, Indian stakeholders need to take steps to shift to a new freight paradigm that is more cost-effective, clean, and efficient. This new freight transportation paradigm will also help India achieve its development goals, including improved air quality, improved GDP, better public health, enhanced logistics productivity, more employment opportunities, and is in-line with India's clean mobility ambitions. With a strong foundation of supportive policies and market trends, India can leverage the opportunities by implementing a set of solutions.

## **1.2 Purpose**

The purpose of this project is to improve the railway market share in some commodities and overcome the challenges and maintain sustainable growth in all its commodities. We also try to reduce the congestion on rail corridors and improving port connectivity. And lastly help in the development of dedicated freight corridor across Key ports. All of this is done by analysing already existing data or new data on Railway traffic and data on amount of capacity of passenger and goods a train carries from each port.

# **LITERATURE SURVEY**

## **2.1 Existing Problem**

The importance of the efficiency and performance of a port has been recognized for many years. The performance of ports has been measured by two types of indicators, financial and operational. This study focuses on operational indicators of port performance. One of the first studies addressing this topic defined two metrics from the field of traffic engineering: “occupancy,” the percentage of time that all berths are occupied (“berth occupancy rate”); and “congestion,” the percentage of time that the number of ships in port exceeds the number of available berths (Nicolaou, 1967). The first indicator has the drawback of not describing how occupancy is distributed over time. For example, 50% berth occupancy is as true of a situation in which half of the berths are always occupied and half are always empty, as it is of all berths being occupied half of the time. These clearly different scenarios point out the need for an additional indicator. The second indicator described above, congestion, does not quite meet the need because large ports encompassing long sailing distances can accommodate more sailing vessels than berths without technically being congested. Another study proposed different operational indicators, most of which were related to the productivity of cranes and tons of cargo loaded/unloaded hour. Others, such as waiting time, service time and turn-around time, are more directly and comprehensively related to the operational performance of the port (UNCTAD, 1976). The ratio of waiting time to service time has proven to be an appropriate measure of timeliness of service of the terminal. Generally, acceptable values for this ratio are 30% and below (UNCTAD, 1985). The significance of this ratio is, however, determined by specific rules, and by the costs associated with waiting. Moreover, the use of this indicator alone can result in misleading information if a very low wait-to-service ratio is caused by a very inefficient service team. Other indicators related to throughput from, for example, berths or cranes are useful from some perspectives, but they are related to terminal performance, and not specifically to port traffic performance.

## 2.2 References

1. Estimating Port Network Traffic Capacity - Xavier Bellsolà Olba , Winnie Daamen , Tiedo Vellinga , Serge P. Hoogendoorn
2. IPRC
3. GOCOMET
4. Fast Tracking Freight in India: A Roadmap for Clean and Cost-effective Goods Transport -RMI india
5. Ministry of Commerce and Industry, 2020, “Press Release on National Logistics Policy”. Government of India <https://commerce.gov.in/press-releases/national-logisticspolicy-will-be-released-soon-policy-to-create-a-single-window-e-logistics-market-will-generate-employment-and-make-msmes-competitive-nirmala-sitharaman/>
6. Aritua et al., 2018, “Unlocking India’s Logistics Potential The Value of Disaggregated Macroscopic Freight Flow Analysis.” <http://documents1.worldbank.org/curated/en/888791518530457570/pdf/WPS8337.pdf>
7. Dedicated Freight Corridor Corporation of India Limited, <https://dfccil.com/>
8. “Guidelines for Measuring and Managing CO2 Emission from Freight Transport Operations,” The European Chemical Industry Council, 2011, [https://www.ecta.com/resources/Documents/Best%20Practices%20Guidelines/guideline\\_for\\_measuring\\_and\\_managing\\_co2.pdf](https://www.ecta.com/resources/Documents/Best%20Practices%20Guidelines/guideline_for_measuring_and_managing_co2.pdf)

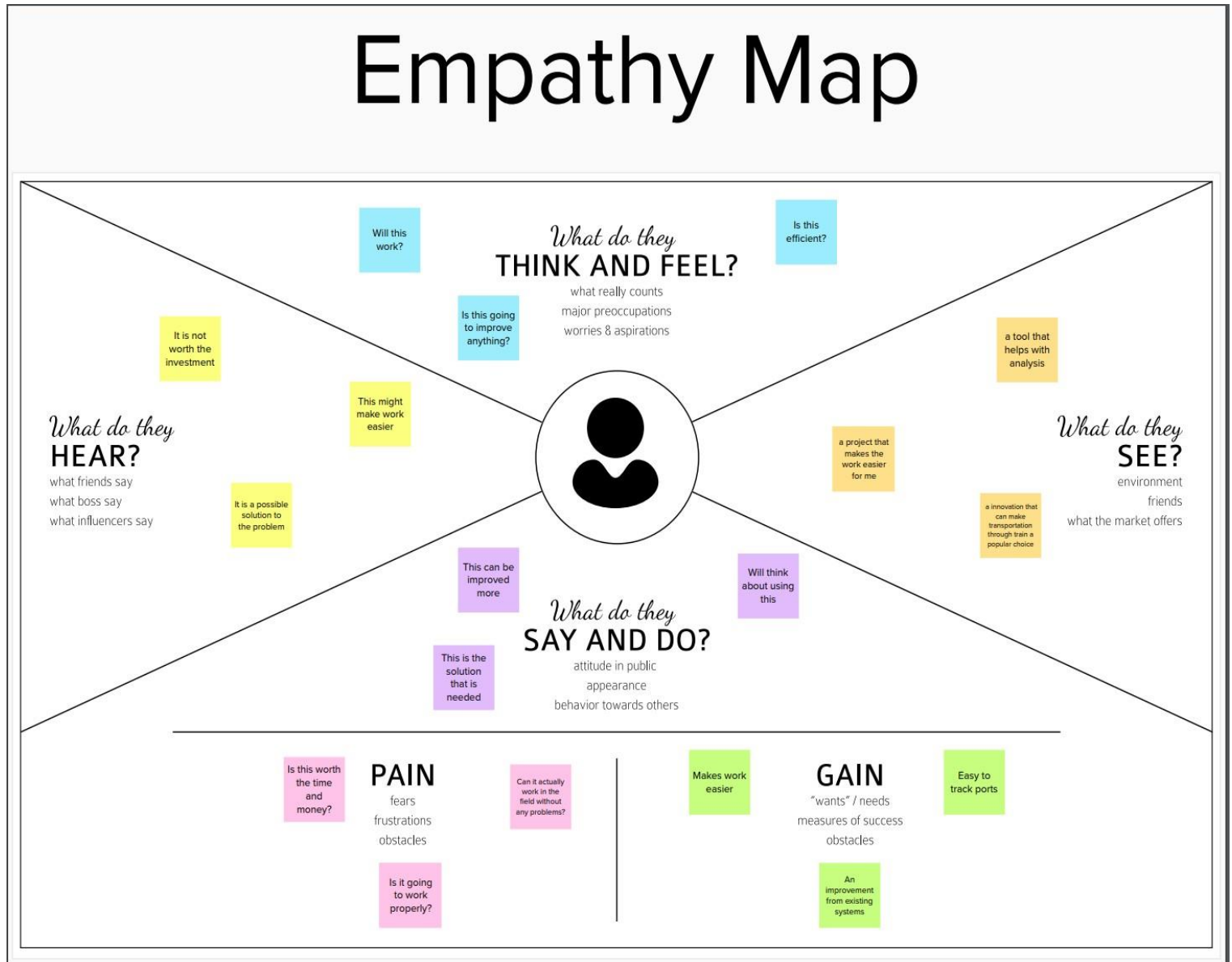
## **2.3 Problem Statement Definition**

The Indian Railways has a capital base of about Rs. 100000 crores and is often referred to as the lifeline of the Indian economy because of its predominance in transportation of bulk freight and long-distance passenger traffic. The network criss-crosses the nation, binding it together by ferrying freight and passengers across the length and breadth of the country. As the Indian economy moves into a high growth trajectory the Railways have also stepped-up developmental efforts and are preparing themselves for an even bigger role in the future.



# IDEATION & PROPOSED SOLUTION

## 3.1 Empathy Map Canvas



## 3.2 Ideation & Brainstorming

→

### Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

#### A Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

#### B Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

#### C Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

1

### Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

How can we implement  
Traffic And Capacity  
Analytics For Major Ports?



#### Key rules of brainstorming

To run a smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

2

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

**TIP**  
You can select a sticky note and hit the pencil icon (switch to sketch) icon to start drawing!

#### Neeraj.S

|                   |                      |  |
|-------------------|----------------------|--|
| Create a database | Compile all the data | Compare all the Data                               |
| Create a website  | Create an app        | Use the information gathered to create a dashboard |

#### Pranav Pandey.M

|                                 |                                    |                                    |
|---------------------------------|------------------------------------|------------------------------------|
| Find out a business opportunity | Make a business plan               | Analyze the data step by step      |
| Make a business plan            | Visualize the data                 | Implement the data in a dashboard  |
| Identify a business opportunity | Use the data to create a dashboard | Use the data to create a dashboard |

#### Nanthu

|                                 |                    |                    |
|---------------------------------|--------------------|--------------------|
| Identify a business opportunity | Collect data       | Community analysis |
| Competitive advantage           | Test based on data | Develop a new app  |
| Point view analysis             | Priority support   | Outlook            |

#### DJ Prashanth

|                          |                                |                                 |
|--------------------------|--------------------------------|---------------------------------|
| Actual and expected data | Individual data                | Use data to create a dashboard  |
| Strategic analysis       | Use data to create a dashboard | The traffic is provided         |
| Part of the data         | Platforms are created          | Tools and resources are created |

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes



**TIP**  
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



### 3.3 Proposed Solution

| S.No. | Parameter                                   | Description  |
|-------|---|--|
| 1.    | Problem Statement<br>(Problem to be solved) | The Indian Railways has a capital base of about Rs. 100000 crores and is often referred to as the lifeline of the Indian economy because of its predominance in transportation of bulk freight and long-distance passenger traffic. The network criss-crosses the nation, binding it together by ferrying freight and passengers across the length and breadth of the country. As the Indian economy moves into a high growth trajectory the Railways have also stepped-up developmental efforts and are preparing themselves for an even bigger role in the future. |
| 2.    | Idea / Solution description                 | We came up with a solution by using Data analysis to predict the amount of Traffic and Total capacity in the form of visualizations  |
| 3.    | Novelty / Uniqueness                        | Many different visualizations can be used to show the analysis, which makes it easier to predict and analyse.  |
| 4.    | Social Impact / Customer Satisfaction       | It helps in preventing delay of cargo in ports, which leads to more usage of ports by companies to import/export cargo. It is also easier to understand and can be used by anyone.   |
| 5.    | Business Model (Revenue Model)              | It is free to use, but if user needs to use new data they need to create an account to input data and get the visualization they need.   |
| 6.    | Scalability of the Solution                 | It can be implemented using any we framework and can be made available to everyone in need.  |

## 3.4 Problem Solution fit

Project Title:

Project Design Phase-I - Solution Fit Template

Team ID: PNT2022TMIDxxxxxx

|  |  |   |  |                            |
|--|--|---|--|----------------------------|
| Define CS, fit into CC                   | <b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span><br>Who is your customer?<br>i.e. working parents of 0-5 y.o. kids<br><br><b>The Authority of Railway Stations and Harbor Ports that suffers traffic are our customers</b>  | <b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span><br>What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.<br><br><b>Spending power, budget, low manpower, network connection, lack of analytic skills ,insufficient resources like land cash etc.,</b>   | <b>5. AVAILABLE SOLUTIONS</b> <span>AS</span><br>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking<br><br><b>Hiring more workers to monitor the traffic ,this may see less technical and simple but needed to pay more to employee</b>   | Explore AS, differentiate  |
|  | <b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span><br>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.<br><br><b>Analyzing and controlling traffic in ports and maintain a free environment.</b>                               | <b>9. PROBLEM ROOT CAUSE</b> <span>RC</span><br>What is the real reason that this problem exists?<br>What is the back story behind the need to do this job?<br>i.e. customers have to do it because of the change in regulations.<br><br><b>Increase in number of trains in railways and number of ships in port due to the transportation of vast number of passengers and goods.</b>  | <b>7. BEHAVIOUR</b> <span>BE</span><br>What does your customer do to address the problem and get the job done?<br>i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)<br><br><b>The railway or waterway department can maintain a team who can analyze and schedule time for trains and ships using our application</b>   |                            |
| Focus on J&P, tap into BE, understand RC | <b>3. TRIGGERS</b> <span>TR</span><br>What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.<br><br>Seeing other countries system of analyzing and maintaining the traffic in the ports and the time to clear the traffic.      | <b>10. YOUR SOLUTION</b> <span>SL</span><br>If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.<br>If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.<br><br>Can the capacity of a port be measured using a robust methodological framework i to develop a decision making tool for port infrastructure development? The aim of the research is to develop a process for prioritizing investment decisions by evaluating and advancing an existing methodology for port capacity measurement, applying and | <b>8.CHANNELS of BEHAVIOUR</b> <span>CH</span><br><b>8.1 ONLINE</b><br>What kind of actions do customers take online? Extract online channels from #7<br><br><b>8.2 OFFLINE</b><br>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.<br><br>Offline : The department must report the number of ships or trains to the management team.<br><br>Online: The team can analyze the traffic and schedule time for trains and ships to reach the ports | Focus on BE, understand TR |
|  | <b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span><br>How do customers feel when they face a problem or a job and afterwards?<br>i.e. lost, insecure > confident, in control - use it in your communication strategy & design.<br><br>The customer feels irritated and get tensed when traffic occurs in the port. |   |  |                            |
| Identify strong TR & EM                  |  |   |  | Identify strong TR & EM    |

# **REQUIREMENT ANALYSIS**

## **4.1 Functional Requirement**

| <b>FR No.</b> | <b>Functional Requirement</b> | <b>Description</b>                                      |
|---------------|-------------------------------|---|
| FR-1          | User Registration             | It is necessary to register to upload data              |
| FR-2          | Using a web browser           | Requires a desktop or mobile browser to use application |

## **4.2 Non - Functional requirement**

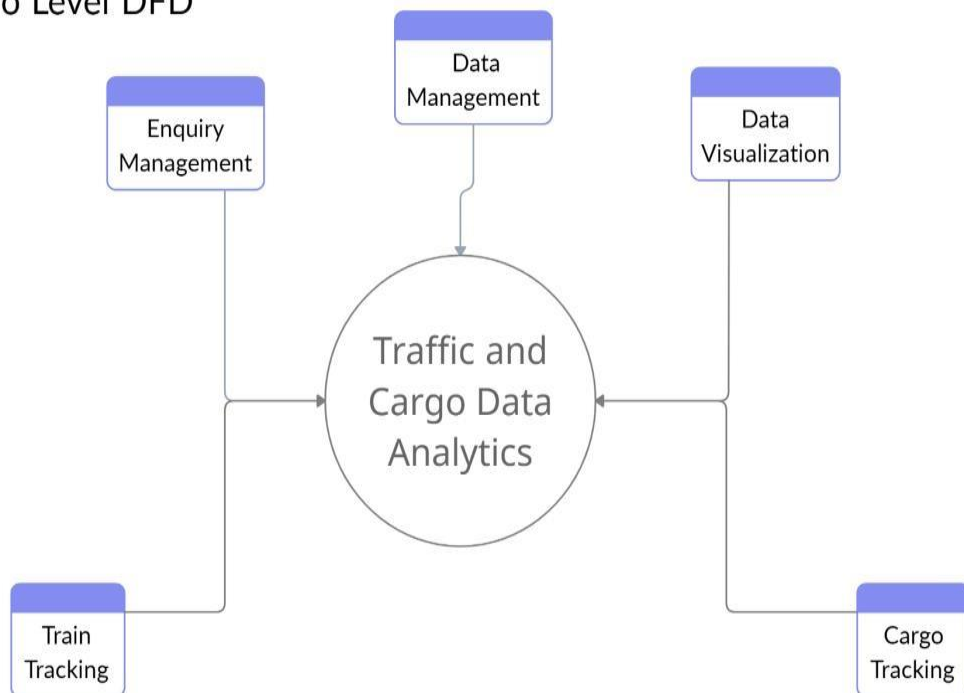
| <b>NFR No.</b> | <b>Non-Functional Requirement</b> | <b>Description</b>   |
|----------------|-----------------------------------|--|
| NFR-1          | Usability                         | Visualizations are easy to make and easy to use for analysis   |
| NFR-2          | Security                          | Application has Sign in only for updating data in site.  |
| NFR-3          | Reliability                       | Able to predict easily for analysis. Also, able to view visualizations if the server is still running. |
| NFR-4          | Performance                       | Application runs fast as long as internet is fast  |

# **PROJECT DESIGN**

## **5.1 Data Flow Diagrams**

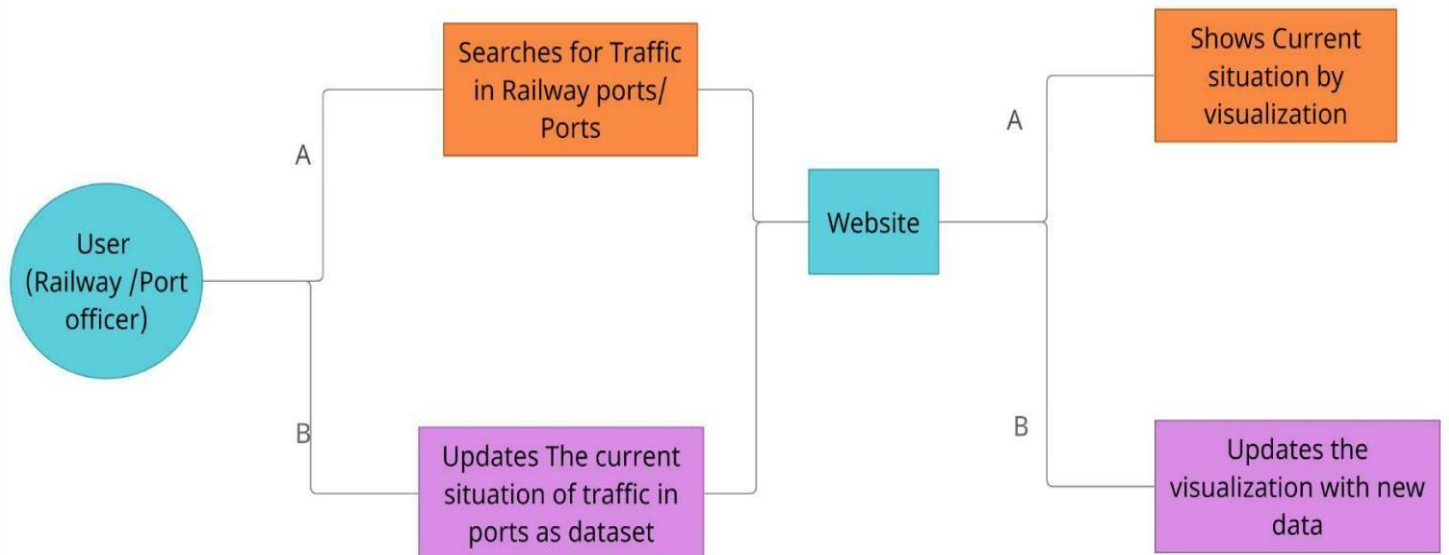
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Zero Level DFD



## 5.2 Solution & Technical Architecture

### Solution Architecture:





### **Technical Architecture:**

- To regain some of the market, it has lost over past decades and regain market share in some commodities and overcome the challenges and to maintain sustainable growth in all its commodities.
- Reducing the congestion on rail corridors and improving port connectivity.
- The development of two Dedicated Freight Corridors across key ports

## **5.3 User Stories**

To list all the user stories for the product.

| <b>User Type</b> | <b>Functional Requirement (Epic)</b> | <b>User Story Number</b> | <b>User Story / Task</b>  | <b>Acceptance criteria</b>          | <b>Priority</b> |
|------------------|--------------------------------------|--------------------------|---|-------------------------------------|-----------------|
| User             | Registration                         | USN-1                    | As a user, I can register for the application by entering my email, password, and confirming my password. | User can Register                   | High            |
| User             | Login to Dashboard                   | USN-2                    | As a user, I can log into the application by entering email & password                                    | User can Login                      | High            |
| User             | Open and work in Cognos              | USN-3                    | As a user, I can open the Cognos analytic workspace   | User can open Cognos                | Medium          |
| User             | Data Analysis and traffic Prediction | USN-6                    | As a user, I can predict and schedule the traffic   | User can Visualise and predict data | High            |

# **PROJECT PLANNING & SCHEDULING**

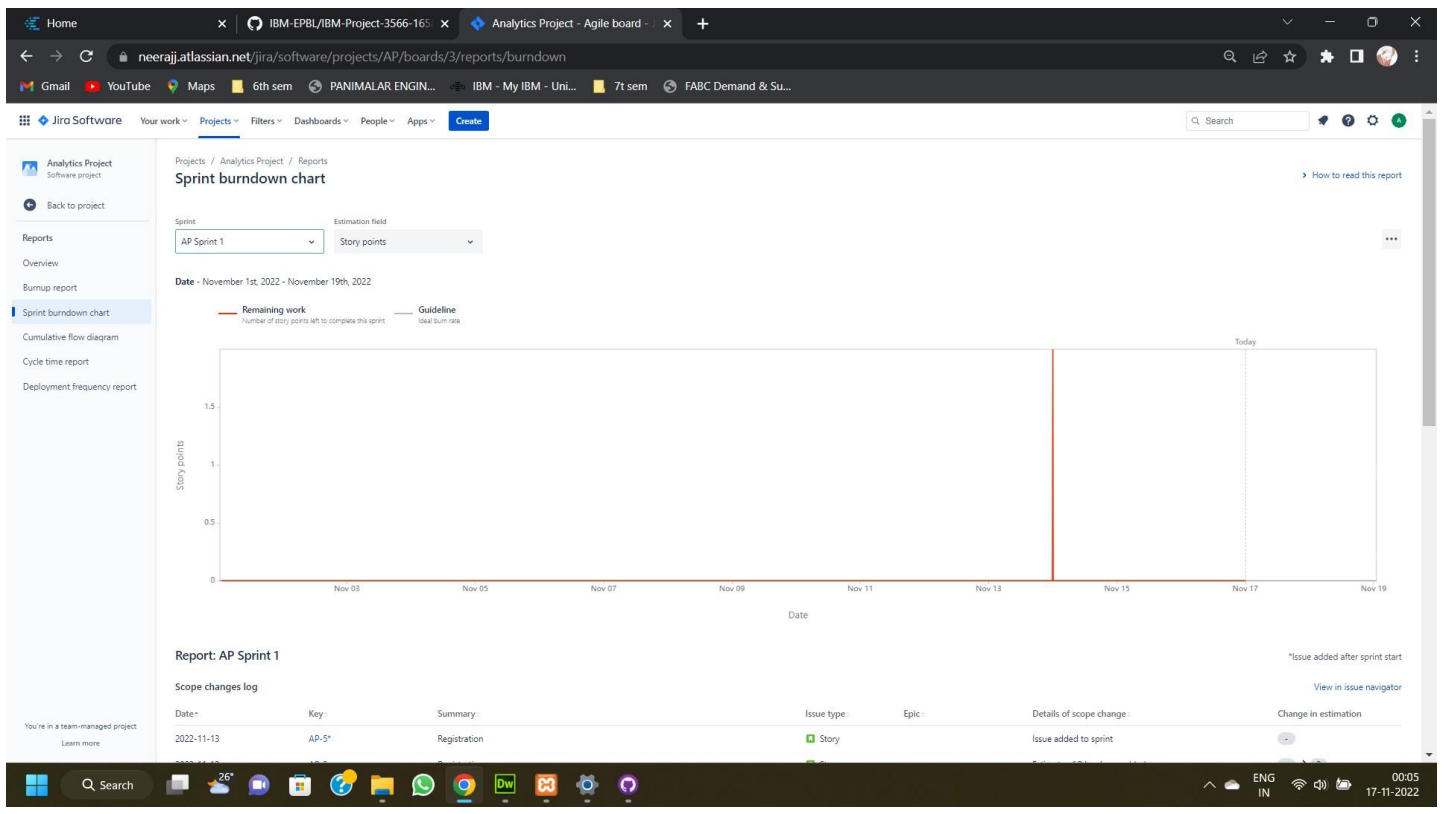
## **6.1 Sprint Planning & Estimation**

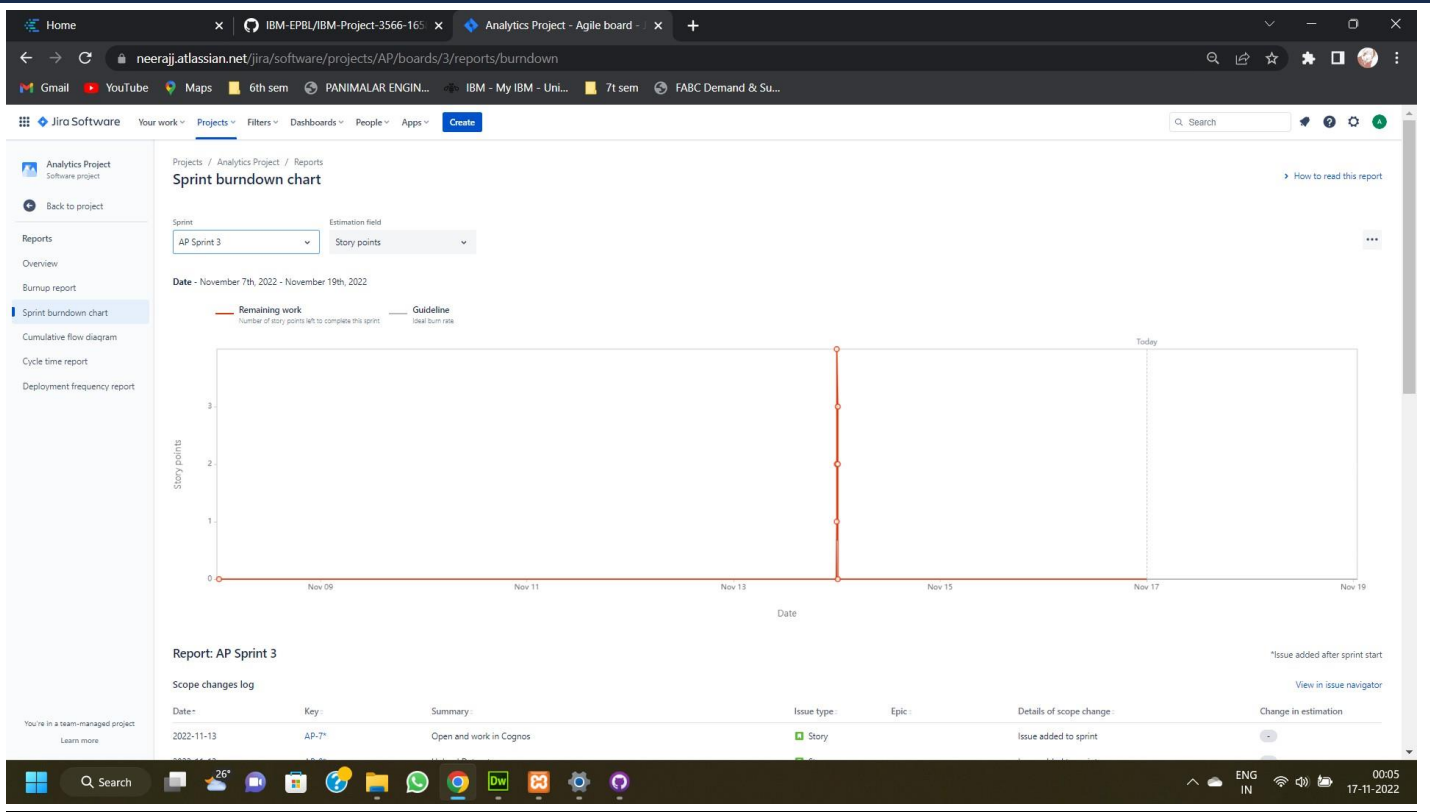
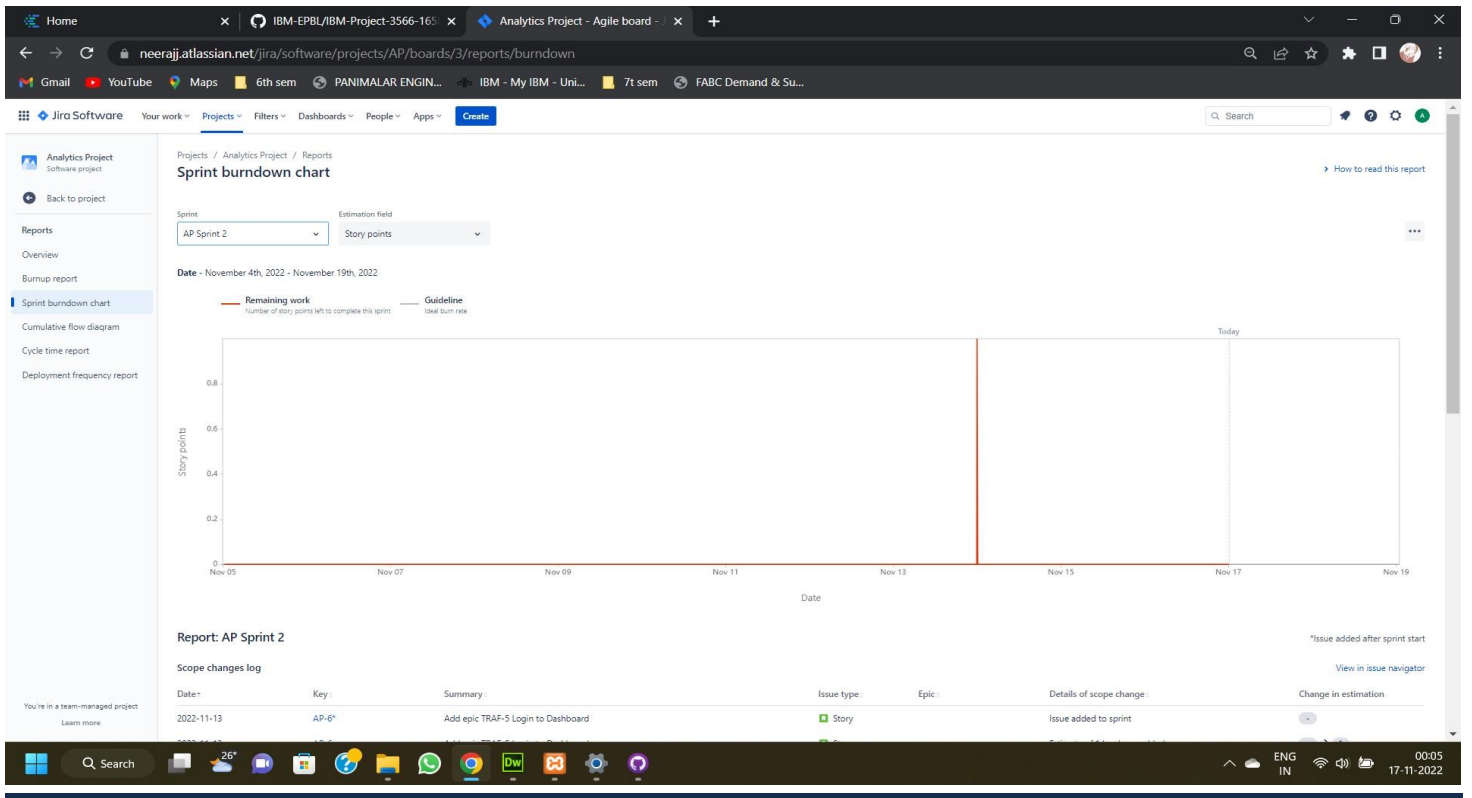
| <b>Sprint</b> | <b>Functional Requirement (Epic)</b> | <b>User Story Number</b> | <b>User Story / Task</b>  | <b>Story Points</b> | <b>Priority</b> | <b>Team Members</b>                               |
|---------------|--------------------------------------|--------------------------|---|---------------------|-----------------|---|
| Sprint-1      | Registration                         | USN-1                    | As a user, I can register for the application by entering my email, password, and confirming my password. | 2                   | High            | Ranjith K.G<br>Rithika S<br>Riyasdeen<br>Rogesh R |
| Sprint-2      | Login to Dashboard                   | USN-2                    | As a user, I can log into the application by entering email & password                                    | 1                   | High            | Ranjith K.G<br>Rithika S<br>Riyasdeen<br>Rogesh R |
| Sprint-3      | Open and work in Cognos              | USN-3                    | As a user, I can open the cognos analytic workspace   | 1                   | Medium          | Ranjith K.G<br>Rithika S<br>Riyasdeen<br>Rogesh R |
|               | Upload Dataset                       | USN-4                    | As a user, I can upload the dataset in the workspace  | 1                   | High            |   |
|               | Visualize the data                   | USN-5                    | As a user, I can visualize the dataset in different forms   | 2                   | Medium          |   |
| Sprint-4      | Data Analysis and traffic Prediction | USN-6                    | As a user, I can predict and schedule the traffic   | 2                   | High            | Ranjith K.G<br>Rithika S<br>Riyasdeen<br>Rogesh R |

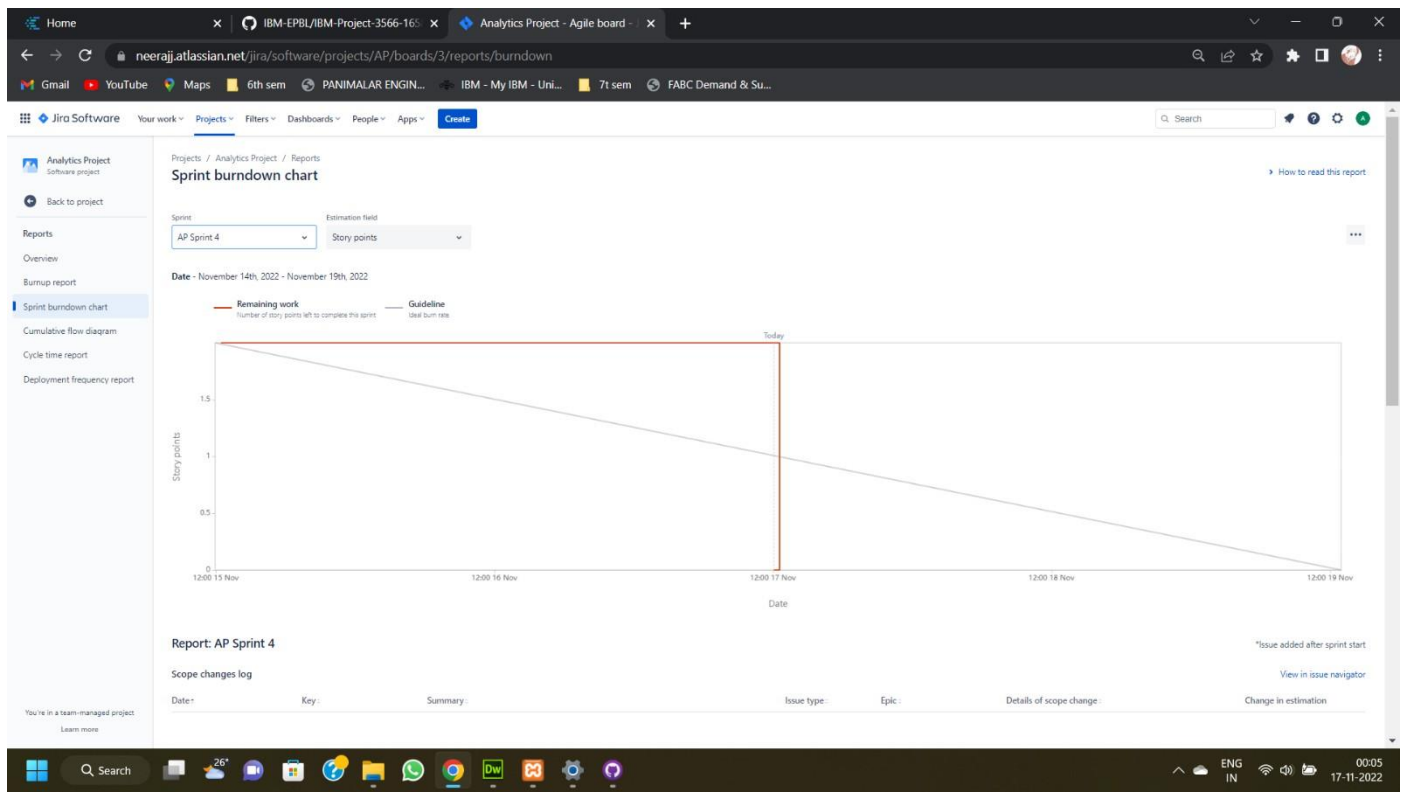
## 6.2 Sprint Delivery Schedule

| Sprint   | Total Story Points | Duration | Sprint Start Date | Sprint End Date (Planned) | Story Points Completed (as on Planned End Date) | Sprint Release Date (Actual) |
|----------|--------------------|----------|-------------------|---------------------------|---|------------------------------|
| Sprint-1 | 20                 | 9 Days   | 1 Nov 2022        | 10 Nov 2022               | 20  | 10 Nov 2022                  |
| Sprint-2 | 20                 | 6 Days   | 4 Nov 2022        | 10 Nov 2022               | 20  | 10 Nov 2022                  |
| Sprint-3 | 20                 | 3 Days   | 07 Nov 2022       | 10 Nov 2022               | 20  | 10 Nov 2022                  |
| Sprint-4 | 20                 | 3 Days   | 14 Nov 2022       | 10 Nov 2022               | 20  | 10 Nov 2022                  |

## 6.3 Reports from JIRA







# CODING & SOLUTIONING

## 7.1 Feature 1

The user can Register for the website. The registration is done so that the user can Login, upload dataset and get the virtualization they want.

The following is the coding for Registration.

### **Registration.php**

<?php

```
// Include config file
require_once "config.php";
// Define variables and initialize with empty values
$username = $email = $password = $confirm_password = "";
$username_err = $email_err = $password_err =
```

```

$confirm_password_err = "";

// Processing form data when form is submitted
if($_SERVER["REQUEST_METHOD"] == "POST"){

    // Validate username
    if(empty(trim($_POST["username"]))) {
        $username_err = "Please enter a username.";
    } elseif(!preg_match('/^[a-zA-Z0-9_]+$/', trim($_POST["username"]))) {
        $username_err = "Username can only contain letters, numbers, and underscores.";
    } else {
        // Prepare a select statement
        $sql = "SELECT id FROM users WHERE username = ?";

        if($stmt = mysqli_prepare($link, $sql)){
            // Bind variables to the prepared statement as parameters
            mysqli_stmt_bind_param($stmt, "s", $param_username);

            // Set parameters
            $param_username = trim($_POST["username"]);

            // Attempt to execute the prepared statement
            if(mysqli_stmt_execute($stmt)){
                /* store result */
                mysqli_stmt_store_result($stmt);

                if(mysqli_stmt_num_rows($stmt) == 1){
                    $username_err = "This username is already taken.";
                } else {
                    $username = trim($_POST["username"]);
                }
            } else {
                echo "Oops! Something went wrong. Please try again later.";
            }

            // Close statement
            mysqli_stmt_close($stmt);
        }
    }
}

```

```

}

if(empty(trim($_POST["email"]))) {
    $email_err = "Please enter a email.";

} else {
    $email = trim($_POST["email"]);
}


// Validate password
if(empty(trim($_POST["password"]))) {
    $password_err = "Please enter a password.";
} elseif(strlen(trim($_POST["password"])) < 6) {
    $password_err = "Password must have atleast 6 characters.";
} else {
    $password = trim($_POST["password"]);
}


// Validate confirm password
if(empty(trim($_POST["confirm_password"]))) {
    $confirm_password_err = "Please confirm password.";
} else {
    $confirm_password = trim($_POST["confirm_password"]);
    if(empty($password_err) && ($password != $confirm_password)) {
        $confirm_password_err = "Password did not match.";
    }
}


// Check input errors before inserting in database
if(empty($username_err) && empty($email_err) &&
empty($password_err) && empty($confirm_password_err)) {

    // Prepare an insert statement
    $sql = "INSERT INTO users (username,email, password) VALUES
(?, ?, ?)";

    if($stmt = mysqli_prepare($link, $sql)) {
        // Bind variables to the prepared statement as parameters

```

```

        mysqli_stmt_bind_param($stmt, "sss",
        $param_username,$param_email, $param_password);

        // Set parameters
        $param_username = $username;
        $param_email    = $email;
        $param_password = password_hash($password,
        PASSWORD_DEFAULT); // Creates a password hash

        // Attempt to execute the prepared statement
        if(mysqli_stmt_execute($stmt)){
            // Redirect to login page
            header("location: Success.php");
        } else{
            echo "Oops! Something went wrong. Please try again later.";
        }

        // Close statement
        mysqli_stmt_close($stmt);
    }
}

// Close connection
mysqli_close($link);
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <title>Sign Up</title>
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.mi
n.css">
    <style>
        body{ font: 14px sans-serif; }
        .center {
margin: auto;
width: 500px;
border: 3px solid blue;

```



```
padding: 10px;  
font-size: 14px;  
opacity: 0.9;  
background-color: gray;
```

```
}
```

```
body {  
background-image: url(rail.jpg);  
background-size: cover;  
}
```

```
#apDiv1 {  
position: absolute;  
  
width: 1645px;  
  
height: 75px;  
z-index: 1;  
color: #39F;  
background-color: #660066;  
top: 1px;  
left: 1px;  
border: 3px solid gray;  
padding: 10px;  
}
```

```
#apDiv2 {  
position: absolute;  
width: 134px;  
height: 54px;  
z-index: 2;  
left: 1224px;  
top: 7px;  
color: #F00;  
text-align: center;  
border: 3px;  
padding: 10px;  
}
```

```
#apDiv3 {  
position: absolute;  
width: 138px;
```

```

height: 55px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
    #apDiv1 #apDiv2 h3 a {
color: #0F0;
}
    #apDiv1 #apDiv3 h3 a {
color: #F00;
}
a{
color: #0F0;
}

```

```

</style>
</head>
<body>
<a href="home.php"></a>
<div id="apDiv1">
    <h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>
    <div id="apDiv2">
        <h3><a href="Login.php">Sign in</a></h3></div>
        <div id="apDiv3">
            <h3> <a href="Register.php">Sign up</a></h3>
        </div>
    </div>
    <a href="home.php">
<H1 style="width:100px;height:100px;">&nbsp;</H1>
</a>

    <div class="center">

```

```

<h2>Sign Up</h2>
<p>Please fill this form to create an account.</p>
<form action="<?php echo
htmlspecialchars($_SERVER["PHP_SELF"]); ?>" method="post">
  <div class="form-group">
    <label>Username</label>
    <input type="text" name="username" class="form-control
    <?php echo (!empty($username_err)) ? 'is-invalid' : ''; ?>" value="<?php
    echo $username; ?>">
    <span class="invalid-feedback"><?php echo $username_err;
    ?></span>
  </div>
  <div class="form-group">
    <label>Email Address</label>
    <input type="email" name="email" class="form-control <?php
    echo (!empty($email_err)) ? 'is-invalid' : ''; ?>" value="<?php echo $email;
    ?>">
    <span class="invalid-feedback"><?php echo $email_err;
    ?></span>
  </div>

  <div class="form-group"></div>

  <div class="form-group">
    <label>Password</label>
    <input type="password" name="password" class="form-control
    <?php echo (!empty($password_err)) ? 'is-invalid' : ''; ?>" value="<?php
    echo $password; ?>">
    <span class="invalid-feedback"><?php echo $password_err;
    ?></span>
  </div>
  <div class="form-group">
    <label>Confirm Password</label>
    <input type="password" name="confirm_password"
    class="form-control <?php echo (!empty($confirm_password_err)) ? 'is-
    invalid' : ''; ?>" value="<?php echo $confirm_password; ?>">
    <span class="invalid-feedback"><?php echo
    $confirm_password_err; ?></span>
  </div>
  <div class="form-group">

```

```

        <input type="submit" class="btn btn-primary" value="Submit">
    </div>
    <p>Already have an account? <a href="Login.php">Login
here</a>.</p>

    </form>
</div>
</body>
</html>

```

## 7.2 Feature 2

The following feature allows the user to be able to connect the visualization to the website.

The following is the code for Dashboard

### **Dashboard.php**

```

<!DOCTYPE html>
<html lang="en">
<head>
<style>
body{
font: 14px sans-serif;
background-color: #333;
}

#apDiv1 {
position: absolute;
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;
background-color: #660066;
top: 1px;
left: 1px;
border: 3px solid gray;
padding: 10px;

```

```
}  
#apDiv2 {  
position: absolute;  
width: 134px;  
height: 54px;  
z-index: 2;  
left: 1224px;  
top: 7px;  
color: #F00;  
text-align: center;  
border: 3px;  
padding: 10px;  
}  
#apDiv3 {  
position: absolute;  
width: 138px;  
height: 54px;  
z-index: 2;  
left: 1385px;  
top: 7px;  
color: #000;  
text-align: center;  
font-weight: bold;  
border: 3px solid black;  
padding: 10px;  
}
```

```
#apDiv1 #apDiv2 h3 a {  
color: #0F0;  
}  
#apDiv1 #apDiv3 h3 a {  
color: #F00;  
}  
.justified {  
text-align: justify;  
}
```

```
#apDiv4 {  
position: absolute;  
left: 281px;
```

```
top: 28px;
width: 631px;
height: 36px;
z-index: 2;
}
```

```
</style>
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"
type="text/css">
<style type="text/css">
#apDiv5 {
position: absolute;
left: 63px;
top: 112px;
width: 1323px;
height: 731px;
z-index: 3;
}
</style>
<script src="SpryAssets/SpryMenuBar.js"
type="text/javascript"></script>
<meta charset="utf-8">
</head>
```

```
<body>
<div id="apDiv4">
  <ul id="MenuBar1" class="MenuBarHorizontal">
    <li><a href="Dashboard.php">Dashboard</a></li>
    <li><a href="Report.php">Report</a></li>
    <li><a href="Story.php">Story</a></li>
  </ul>
</div>
<div id="apDiv5">
<iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&p
athRef=.my_folders%2FTraffic%2Band%2BPort%2BVisualization&
;closeWindowOnLastView=true&ui_appbar=false&ui_navbar=
false&shareMode=embedded&action=view&mode=dashb
oard&subView=model000001845f75bd7a_00000002"
```

```

width="1400" height="700" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe></div>
<a href="home.php"></a>
<div id="apDiv1">
<h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>

<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3> <a href="Register.php">Sign up</a></h3>
</div>
</div><br><br><br><br><br><br>
</body>
</html>

```

## **Report.php**

```

<!DOCTYPE html>
<html lang="en">
<head>
<style>
body{
font: 14px sans-serif;
background-color: #333;
}
#apDiv1 {
position: absolute;
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;
background-color: #660066;
top: 1px;
left: 1px;
border: 3px solid gray;
padding: 10px;
}
#apDiv2 {

```

```
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
#apDiv3 {
position: absolute;
width: 138px;
height: 54px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
#apDiv1 #apDiv2 h3 a {
color: #0F0;
}
#apDiv1 #apDiv3 h3 a {
color: #F00;
}
.justified {
text-align: justify;
}
#apDiv4
{
position: absolute;
left: 281px;
top: 28px;
width: 631px;
height: 36px;
```



```

z-index: 2;
}

</style>
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"
type="text/css">
<style type="text/css">
#apDiv5
{
position: absolute;
left: 63px;
top: 112px;
width: 1323px;
height: 731px;
z-index: 3;
}
</style>
<script src="SpryAssets/SpryMenuBar.js"
type="text/javascript"></script>
<meta charset="utf-8">
</head>

<body>
<div id="apDiv4">
<ul id="MenuBar1" class="MenuBarHorizontal">
<li><a href="Dashboard.php">Dashboard</a></li>
<li><a href="Report.php">Report</a></li>
<li><a href="Story.php">Story</a></li>
</ul>
</div>
<div id="apDiv5">
<iframe
src="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FRepo
rt&closeWindowOnLastView=true&ui_appbar=false&ui_
navbar=false&shareMode=embedded&action=run&format
=HTML&prompt=false" width="1200" height="600"
frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe></div>
<a href="home.php"></a>
<div id="apDiv1">

```

```
<h1>
<a href="home.php">
<span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;">
<strong> Home</strong>
</span>
</a> </h1>
<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3> <a href="Register.php">Sign up</a></h3>
</div>
</div>
<br><br>
<br><br>
<br><br>
</body>
</html>
```

# Testing

## 8.1 Test Cases

| Test case ID     | Feature Type | Component  | Test Scenario   | Pre-Requisite | Steps To Execute  | Test Data  | Expected Result  | Actual Result       | Status | Commnets | TC for Automation(V/N) | BUG ID | Executed By |
|------------------|--------------|------------|---|---------------|---|--|--|---------------------|--------|----------|------------------------|--------|-------------|
| LoginPage_TC_001 | Functional   | Home Page  | Verify user is able to see the Login/Signup popup when user clicked on My account |               | 1.Click Sign in<br>2.Verify login/Signup popup displayed or not   | <a href="#">Home.php</a>                                       | Login/Signup popup should display  | Working as expected | Pass   | none     | N                      |        | Neerajj     |
| LoginPage_TC_002 | UI           | Home Page  | Verify the UI elements in Login/Signup popup                                      |               | 1.Click sign in/Login<br>2.Verify login/Signup popup with below UI elements:<br>a.username text box<br>b.password text box<br>c.Login button<br>d.Don't have an account? Sign up now link   | <a href="#">Home.php</a>                                       | Application should show below UI elements:<br>a.username text box<br>b.password text box<br>c.Login button with Blue colour<br>d.Don't have an account? Sign up now link | Working as expected | Pass   | none     | N                      |        | Neerajj     |
| LoginPage_TC_003 | Functional   | Home page  | Verify user is able to log into application with Valid credentials                |               | 1.Enter URL( <a href="http://localhost/Demo/home.php">http://localhost/Demo/home.php</a> ) and click go<br>2.Click on Sign in button<br>3.Enter Valid username/email in Username text box<br>4.Enter valid password in password text box<br>5.Click on login button | Username: User<br>password:<br>12341234                        | User should navigate to user account   | Working as expected | Pass   | none     | N                      |        | Neerajj     |
| LoginPage_TC_004 | Functional   | Login page | Verify user is not able to log into application with InValid credentials          |               | 1.Enter URL( <a href="http://localhost/Demo/home.php">http://localhost/Demo/home.php</a> ) and click go<br>2.Click on Sign in button<br>3.Enter InValid username/email in Email text box<br>4.Enter valid password in password text box<br>5.Click on login button  | Username: chalam@gmail<br>password:<br>12341234                | Application should show 'Invalid username or password ' validation message.  | Working as expected | Pass   | none     | N                      |        | Neerajj     |
| LoginPage_TC_004 | Functional   | Login page | Verify user is not able to log into application with InValid credentials          |               | 1.Enter URL( <a href="http://localhost/Demo/home.php">http://localhost/Demo/home.php</a> ) and click go<br>2.Click on Sign in button<br>3.Enter Valid username in Username text box<br>4.Enter Invalid password in password text box<br>5.Click on login button     | Username: User<br>password:<br>Testing1236786867<br>86876876   | Application should show 'Invalid username or password ' validation message.  | Working as expected | Pass   | none     | N                      |        | Neerajj     |
| LoginPage_TC_005 | Functional   | Login page | Verify user is able to log into application with InValid credentials              |               | 1.Enter URL( <a href="http://localhost/Demo/home.php">http://localhost/Demo/home.php</a> ) and click go<br>2.Click on Sign in button<br>3.Enter Valid username in Username text box<br>4.Enter Invalid password in password text box<br>5.Click on login button     | Username: chalam<br>password:<br>Testing1236786867<br>86876876 | Application should show 'Invalid username or password ' validation message.  | Working as expected | Pass   | none     | N                      |        | Neerajj     |

## 8.2 User Acceptance Testing

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

| Resolution     | Severity 1 | Severity 2 | Severity 3 | Severity 4 | Subtotal |
|----------------|------------|------------|------------|------------|----------|
| By Design      | 10         | 4          | 2          | 0          | 16       |
| Duplicate      | 1          | 0          | 3          | 0          | 4        |
| External       | 2          | 3          | 0          | 1          | 6        |
| Fixed          | 2          | 2          | 0          | 0          | 4        |
| Not Reproduced | 0          | 0          | 1          | 0          | 1        |
| Skipped        | 0          | 0          | 0          | 0          | 0        |
| Won't Fix      | 0          | 5          | 2          | 1          | 8        |
| Totals         | 15         | 14         | 8          | 5          | 39       |

This report shows the number of test cases that have passed, failed, and untested

| Section             | Total Cases | Not Tested | Fail | Pas s |
|---------------------|-------------|------------|------|-------|
| Print Engine        | 7           | 0          | 0    | 7     |
| Security            | 2           | 0          | 0    | 2     |
| Outsource Shipping  | 3           | 0          | 0    | 3     |
| Exception Reporting | 6           | 0          | 0    | 6     |
| Final Report Output | 4           | 0          | 0    | 4     |
| Version Control     | 1           | 0          | 0    | 1     |

# **Result**

## **9.1 Performance Metrics**

| <b>S.N<br/>o.</b> | <b>Parameter</b>                            | <b>Screenshot / Values</b>  |
|-------------------|---|---|
| 1.                | Dashboard design                            | No of Visualizations / Graphs - 19  |
| 2.                | Data<br>Responsiveness                      | Positive  |
| 3.                | Amount Data to<br>Rendered (DB2<br>Metrics) | Two data were rendered: Traffic Percentage and<br>Total Capacity Percentage |
| 4.                | Utilization of Data<br>Filters              | 1 filter was used in Dashboard for Collage tab                              |
| 5.                | Effective User Story                        | No of Scene Added – 4 Scenes  |
| 6.                | Descriptive Reports                         | No of Visualizations / Graphs - 5 graphs                                    |

# **Advantages & Disadvantages**

## **Advantages**

- Really simple to make virtualization
- Easier to analyse Data
- Easy to predict using visualizations
- Easy to understand by anyone
- Helps in constructing plan for foreseeable future

## **Disadvantages**

- Need to have an Account to upload data and create new Virtualizations
- Virtualization needs to be updated regularly
- Real-time Live update is not possible yet
- If the uploaded data is wrong the virtualization might be wrong

## **Conclusion**

To conclude the project is able to do the required analysis to predict Traffic and capacity, and is able to do it in a more simple and easy way. The Project can still be improved in many ways, and will be done in future subsequent updates

## **Future Scope**

In the future subsequent updates, the project can be made so that the data can be updated in Real-Time. Further UI updates can also be made to make it more presentable and user friendly. More utilities can be added to the website.

# Appendix

## Source Code

### Register.php

```
<?php
// Include config file
require_once "config.php";

// Define variables and initialize with empty values
$username = $email = $password = $confirm_password = "";
$username_err = $email_err = $password_err = $confirm_password_err =
"";

// Processing form data when form is submitted
if($_SERVER["REQUEST_METHOD"] == "POST"){

    // Validate username
    if(empty(trim($_POST["username"]))) {
        $username_err = "Please enter a username.";
    } elseif(!preg_match('/^[a-zA-Z0-9_]+$/',
trim($_POST["username"]))) {
        $username_err = "Username can only contain letters, numbers, and
underscores.";
    } else {
        // Prepare a select statement
        $sql = "SELECT id FROM users WHERE username = ?";

        if($stmt = mysqli_prepare($link, $sql)){
            // Bind variables to the prepared statement as parameters
            mysqli_stmt_bind_param($stmt, "s", $param_username);

            // Set parameters
            $param_username = trim($_POST["username"]);

            // Attempt to execute the prepared statement
            if(mysqli_stmt_execute($stmt)){
```

```

        /* store result */
        mysqli_stmt_store_result($stmt);

        if(mysqli_stmt_num_rows($stmt) == 1){
            $username_err = "This username is already taken.";
        } else{
            $username = trim($_POST["username"]);
        }
    } else{
        echo "Oops! Something went wrong. Please try again later.";
    }

    // Close statement
    mysqli_stmt_close($stmt);
}

if(empty(trim($_POST["email"]))) {
    $email_err = "Please enter a email.";

} else{
    $email = trim($_POST["email"]);
}


// Validate password
if(empty(trim($_POST["password"]))) {
    $password_err = "Please enter a password.";
} elseif(strlen(trim($_POST["password"])) < 6){
    $password_err = "Password must have atleast 6 characters.";
} else{
    $password = trim($_POST["password"]);
}

// Validate confirm password
if(empty(trim($_POST["confirm_password"]))) {
    $confirm_password_err = "Please confirm password.";
} else{
    $confirm_password = trim($_POST["confirm_password"]);
}

```



```

        if(empty($password_err) && ($password != $confirm_password)){
            $confirm_password_err = "Password did not match.";
        }
    }

    // Check input errors before inserting in database
    if(empty($username_err) && empty($email_err) &&
    empty($password_err) && empty($confirm_password_err)){

        // Prepare an insert statement
        $sql = "INSERT INTO users (username,email, password) VALUES
        (?, ?, ?)";

        if($stmt = mysqli_prepare($link, $sql)){
            // Bind variables to the prepared statement as parameters
            mysqli_stmt_bind_param($stmt, "sss",
            $param_username,$param_email, $param_password);

            // Set parameters
            $param_username = $username;
            $param_email = $email;
            $param_password = password_hash($password,
            PASSWORD_DEFAULT); // Creates a password hash

            // Attempt to execute the prepared statement
            if(mysqli_stmt_execute($stmt)){
                // Redirect to login page
                header("location: Success.php");
            } else{
                echo "Oops! Something went wrong. Please try again later.";
            }
        }

        // Close statement
        mysqli_stmt_close($stmt);
    }

    // Close connection
    mysqli_close($link);
}

```

?>

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
  <meta charset="utf-8">
```

```
  <title>Sign Up</title>
```

```
  <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.mi
n.css">
```

```
  <style>
```

```
    body{ font: 14px sans-serif; }
```

```
.center {
```

```
margin: auto;
```

```
width: 500px;
```

```
border: 3px solid blue;
```

```
padding: 10px;
```

```
font-size: 14px;
```

```
opacity: 0.9;
```

```
background-color: gray;
```

```
}
```

```
body {
```

```
background-image: url(rail.jpg);
```

```
  background-size: cover;
```

```
}
```

```
  #apDiv1 {
```

```
position: absolute;
```

```
width: 1645px;
```

```
height: 75px;
```

```
z-index: 1;
```

```
color: #39F;
```

```
background-color: #660066;
```

```
top: 1px;
```

```
left: 1px;
```

```
border: 3px solid gray;
padding: 10px;
}
    #apDiv2 {
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
    #apDiv3 {
position: absolute;
width: 138px;
height: 55px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
    #apDiv1 #apDiv2 h3 a {
color: #0F0;
}
    #apDiv1 #apDiv3 h3 a {
color: #F00;
}
a{
color: #0F0;
}

</style>
</head>
```

```

<body>
<a href="home.php"></a>
<div id="apDiv1">
  <h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>
  <div id="apDiv2">
    <h3><a href="Login.php">Sign in</a></h3></div>
    <div id="apDiv3">
      <h3> <a href="Register.php">Sign up</a></h3>
    </div>

</div>
<a href="home.php">
<H1 style="width:100px;height:100px;">&nbsp;</H1>
</a>

  <div class="center">
    <h2>Sign Up</h2>
    <p>Please fill this form to create an account.</p>
    <form
                                action="<?php
                                echo
htmlspecialchars($_SERVER["PHP_SELF"]); ?>" method="post">
      <div class="form-group">
        <label>Username</label>
        <input type="text" name="username" class="form-control
<?php echo (!empty($username_err)) ? 'is-invalid' : "; ?>" value="<?php
echo $username; ?>">
        <span class="invalid-feedback"><?php echo $username_err;
?></span>
      </div>
      <div class="form-group">
        <label>Email Address</label>
        <input type="email" name="email" class="form-control <?php
echo (!empty($email_err)) ? 'is-invalid' : "; ?>" value="<?php echo $email;
?>">
        <span class="invalid-feedback"><?php echo $email_err;
?></span>
      </div>

    <div class="form-group"></div>

```

```

        <div class="form-group">
            <label>Password</label>
            <input type="password" name="password" class="form-control
<?php echo (!empty($password_err)) ? 'is-invalid' : ''; ?>" value="<?php
echo $password; ?>">
            <span class="invalid-feedback"><?php echo $password_err;
?></span>
        </div>
        <div class="form-group">
            <label>Confirm Password</label>
            <input type="password" name="confirm_password"
class="form-control <?php echo (!empty($confirm_password_err)) ? 'is-
invalid' : ''; ?>" value="<?php echo $confirm_password; ?>">
            <span class="invalid-feedback"><?php echo
$confirm_password_err; ?></span>
        </div>
        <div class="form-group">
            <input type="submit" class="btn btn-primary" value="Submit">
        </div>
        <p>Already have an account? <a href="Login.php">Login
here</a>.</p>

    </form>
</div>
</body>
</html>

```

## **Login.php**

```

<?php

// Initialize the session
session_start();

// Check if the user is already logged in, if yes then redirect him to
welcome page
if(isset($_SESSION["loggedin"]) && $_SESSION["loggedin"] ===
true){
    header("location: User.php");
    exit;
}

```

```

}

// Include config file
require_once "config.php";

// Define variables and initialize with empty values
$username = $password = "";
$username_err = $password_err = $login_err = "";

// Processing form data when form is submitted
if($_SERVER["REQUEST_METHOD"] == "POST"){

    // Check if username is empty
    if(empty(trim($_POST["username"]))) {
        $username_err = "Please enter username.";
    } else {
        $username = trim($_POST["username"]);
    }

    // Check if password is empty
    if(empty(trim($_POST["password"]))) {
        $password_err = "Please enter your password.";
    } else {
        $password = trim($_POST["password"]);
    }

    // Validate credentials
    if(empty($username_err) && empty($password_err)) {
        // Prepare a select statement
        $sql = "SELECT id, username, password FROM users WHERE
username = ?";

        if($stmt = mysqli_prepare($link, $sql)) {
            // Bind variables to the prepared statement as parameters
            mysqli_stmt_bind_param($stmt, "s", $param_username);

            // Set parameters
            $param_username = $username;

            // Attempt to execute the prepared statement

```

```

if(mysqli_stmt_execute($stmt)){
    // Store result
    mysqli_stmt_store_result($stmt);

    // Check if username exists, if yes then verify password
    if(mysqli_stmt_num_rows($stmt) == 1){
        // Bind result variables
        mysqli_stmt_bind_result($stmt, $id, $username,
$hashed_password);
        if(mysqli_stmt_fetch($stmt)){
            if(password_verify($password, $hashed_password)){
                // Password is correct, so start a new session
                session_start();

                // Store data in session variables
                $_SESSION["loggedin"] = true;
                $_SESSION["id"] = $id;
                $_SESSION["username"] = $username;

                // Redirect user to welcome page
                header("location: User.php");
            } else{
                // Password is not valid, display a generic error message
                $login_err = "Invalid username or password.";
            }
        }
    } else{
        // Username doesn't exist, display a generic error message
        $login_err = "Invalid username or password.";
    }
} else{
    echo "Oops! Something went wrong. Please try again later.";
}

// Close statement
mysqli_stmt_close($stmt);
}
}

// Close connection

```

```
        mysqli_close($link);
    }
?>
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <title>Sign in</title>
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.mi
n.css">
    <style>
        body{ font: 14px sans-serif; }
```

```
.center {
margin: auto;
width: 500px;
border: 3px solid blue;
padding: 10px;
font-size: 14px;
opacity: 0.9;
background-color: gray;

}
```

```
body {
background-image: url(rail1.jpg);
    background-size: cover;
}
```

```
#apDiv1 {
position: absolute;
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;
background-color: #660066;
top: 1px;
left: 1px;
```



```
border: 3px solid gray;
padding: 10px;
}
```

```
#apDiv2 {
```

```
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
```

```
    #apDiv3 {
```

```
position: absolute;
width: 138px;
height: 55px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
```

```
    #apDiv1 #apDiv2 h3 a {
```

```
color: #0F0;
}
```

```
    #apDiv1 #apDiv3 h3 a {
```

```
color: #F00;
}
```

```
a{
color: #F00;
}
```

```
    </style>
```

```
</head>
```

```

<body>
<a href="home.php"></a>
<div id="apDiv1">
  <h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a>    </h1>
  <div id="apDiv2">
    <h3><a href="Login.php">Sign in</a></h3></div>
    <div id="apDiv3">
      <h3> <a href="Register.php">Sign up</a></h3>
    </div>

</div>
<a href="home.php">
<H1 style="width:100px;height:100px;">&nbsp;</H1>
</a>
<div class="center">
  <h2>Login</h2>
  <p>Please fill in your credentials to login.</p>

  <?php
  if(!empty($login_err)){
    echo '<div class="alert alert-danger">' . $login_err . '</div>';
  }
  ?>

  <form action="<?php echo
htmlspecialchars($_SERVER["PHP_SELF"]); ?>" method="post">
    <div class="form-group">
      <label>Username</label>
      <input type="text" name="username" class="form-control
<?php echo (!empty($username_err)) ? 'is-invalid' : ''; ?>" value="<?php
echo $username; ?>">
      <span class="invalid-feedback"><?php echo $username_err;
?></span>
    </div>
    <div class="form-group">
      <label>Password</label>
      <input type="password" name="password" class="form-control
<?php echo (!empty($password_err)) ? 'is-invalid' : ''; ?>">

```

```

        <span class="invalid-feedback"><?php echo $password_err;
?></span>
    </div>
    <div class="form-group">
        <input type="submit" class="btn btn-primary" value="Login">
    </div>
    <p>Don't have an account? <a href="Register.php">Sign up
now</a>.</p>
    </form>
</div>

</body>
</html>

```

## **User.php**

```

<?php
// Initialize the session
session_start();

// Check if the user is logged in, if not then redirect him to login page
if(!isset($_SESSION["loggedin"]) || $_SESSION["loggedin"] !== true){
    header("location: Login.php");
    exit;
}
?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <meta charset="UTF-8">
    <title>Dashboard</title>
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.mi
n.css">

<style>
    body{ font: 14px sans-serif; }

```

```
#apDiv1 {
    position: absolute;
    width: 1645px;
    height: 75px;
    z-index: 1;
    color: #39F;
    background-color: #660066;
    top: 3px;
    left: 1px;
    border: 3px solid gray;
    padding: 10px;
}

    #apDiv2 {
    position: absolute;
    width: 134px;
    height: 54px;
    z-index: 2;
    left: 1313px;
    top: 11px;
    color: #F00;
    text-align: center;
    border: 3px;
    padding: 10px;
}

    #apDiv1 #apDiv2 h3 a {
    color: ##F00;
}

ul {
    list-style-type: none;
    margin: 0;
    padding: 0;
    width: 25%;
    background-color: #f1f1f1;
    position: fixed;
    height: 100%;
    overflow: auto;
}
```

```
li a {
  display: block;
  color: #000;
  padding: 8px 16px;
  text-decoration: none;
}
```

```
li a.active {
  background-color: #04AA6D;
  color: white;
}
```

```
li a: hover: not(.active) {
  background-color: #555;
  color: white;
}
</style>
```

```
<body>
<div id="apDiv1">
  <h1><span style="width: 100px; height: 100px; font-size: 36px; color:
#F0F; font-family: 'Times New Roman', Times, serif;"><strong>User
Dashboard</strong></span></h1>
  <div id="apDiv2">
    <h3><a href="Logout.php">Sign out</a></h3></div>
  </div><br><br><br><br><br><br>
  <div id="apDiv6">
    <ul>
      <li><a class="active">DashBoard Tools</a>
      <ul>
        <li><a
href="https://us3.ca.analytics.ibm.com/bi/?perspective=home">Cognos</
a></li>

      </ul>
    </li>
  </ul>
</div>
<br>
```

```

<div style="margin-left:25%;padding:1px 16px;height:1000px;">
  <h1 class="my-5">Hi, <b><?php echo
htmlspecialchars($_SESSION["username"]); ?></b>. <br>Welcome to
our site.</h1>
  <p>
    <a href="file:///C:/Users/neera/Desktop/reset.php" class="btn btn-
warning">Reset Your Password</a> </p></div>
</body>
</html>

```

## **Home.php**

```

<!DOCTYPE html>
<html lang="en">
<head>
<style>
body{
font: 14px sans-serif;
background-color: #333;
}

#apDiv1 {
position: absolute;
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;
background-color: #660066;
top: 1px;
left: 1px;
border: 3px solid gray;
padding: 10px;
}
#apDiv2 {
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;

```

```
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
#apDiv3 {
position: absolute;
width: 138px;
height: 54px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
```

```
#apDiv1 #apDiv2 h3 a {
color: #0F0;
}
#apDiv1 #apDiv3 h3 a {
color: #F00;
}
.justified {
text-align: justify;
}
```

```
#apDiv4 {
position: absolute;
left: 281px;
top: 28px;
width: 631px;
height: 36px;
z-index: 2;
}
```

```
</style>
```

```
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"
type="text/css">
<style type="text/css">
body,td,th {
color: #FFF;
}
.justified {
font-size: 18px;
}
.justified .justified {
font-size: 18px;
}
#apDiv5 {
position: absolute;
left: 190px;
top: 651px;
width: 1359px;
height: 142px;
z-index: 3;
}
#apDiv6 {
position: absolute;
left: 199px;
top: 642px;
width: 305px;
height: 46px;
z-index: 3;
font-size: 36px;
}
```

```
#apDiv7 {
position: absolute;
left: 203px;
top: 713px;
width: 913px;
height: 82px;
z-index: 4;
font-size: 24px;
border: 3px solid black;
padding: 10px;
```



```

}
</style>
<script src="SpryAssets/SpryMenuBar.js"
type="text/javascript"></script>
<meta charset="utf-8">
</head>

<body>

<div id="apDiv4">
  <ul id="MenuBar1" class="MenuBarHorizontal">
    <li><a href="Dashboard.php">Dashboard</a></li>
    <li><a href="Report.php">Report</a></li>
    <li><a href="Story.php">Story</a></li>
  </ul>
</div>

<div id="apDiv6">Team Members:</div>
<div id="apDiv7">
<p>Neerajj.S &nbsp; Pranav Pandy &nbsp; A.S Nanthu D.J &nbsp;
Prashanth</p></div>
<a href="home.php"></a>
<div id="apDiv1">
<h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>

<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3> <a href="Register.php">Sign up</a></h3>
</div>
</div><br><br><br><br><br><br>
<div style="margin-left: 10%; padding: 1px 16px; height: 1000px; font-
size: 36px; font-weight: bold;">
<p>>About:</p>
<p class="justified"><span class="justified">The Indian Railways has a
capital base of about Rs. 100000 crores and is often referred to as the
lifeline of the Indian economy because of its predominance in
transportation of bulk freight and long distance passenger traffic. The

```

network criss-crosses the nation, binding it together by ferrying freight and passengers across the length and breadth of the country. As the Indian economy moves into a high growth trajectory the Railways have also stepped-up developmental efforts and are preparing themselves for an even bigger role in the future.

Technical Architecture:

- To regain some of the market, it has lost over past decades and regain market share in some commodities and overcome the challenges and to maintain sustainable growth in all its commodities.

- Reducing the congestion on rail corridors and improving port connectivity.

- The development of two Dedicated Freight Corridors across key ports

```
<script type="text/javascript">
```

```
var MenuBar1 = new Spry.Widget.MenuBar("MenuBar1",  
{imgDown:"SpryAssets/SpryMenuBarDownHover.gif",  
imgRight:"SpryAssets/SpryMenuBarRightHover.gif"});
```

```
</script>
```

```
</body>
```

```
</html>
```

## **Dashboard.php**

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
<style>
```

```
body{
```

```
font: 14px sans-serif;
```

```
background-color: #333;
```

```
}
```

```
#apDiv1 {  
position: absolute;  
width: 1645px;  
height: 75px;  
z-index: 1;  
color: #39F;  
background-color: #660066;  
top: 1px;  
left: 1px;  
border: 3px solid gray;  
padding: 10px;  
}
```

```
#apDiv2 {  
position: absolute;  
width: 134px;  
height: 54px;  
z-index: 2;  
left: 1224px;  
top: 7px;  
color: #F00;  
text-align: center;  
border: 3px;  
padding: 10px;  
}
```

```
#apDiv3 {  
position: absolute;  
width: 138px;  
height: 54px;  
z-index: 2;  
left: 1385px;  
top: 7px;  
color: #000;  
text-align: center;  
font-weight: bold;  
border: 3px solid black;  
padding: 10px;  
}
```

```
#apDiv1 #apDiv2 h3 a {  
color: #0F0;
```

```
}  
#apDiv1 #apDiv3 h3 a {  
color: #F00;  
}  
.justified {  
text-align: justify;  
}
```

```
#apDiv4 {  
position: absolute;  
left: 281px;  
top: 28px;  
width: 631px;  
height: 36px;  
z-index: 2;  
}
```

```
</style>  
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"  
type="text/css">  
<style type="text/css">  
#apDiv5 {  
position: absolute;  
left: 63px;  
top: 112px;  
width: 1323px;  
height: 731px;  
z-index: 3;  
}  
</style>  
<script src="SpryAssets/SpryMenuBar.js"  
type="text/javascript"></script>  
<meta charset="utf-8">  
</head>
```

```
<body>  
<div id="apDiv4">  
  <ul id="MenuBar1" class="MenuBarHorizontal">  
    <li><a href="Dashboard.php">Dashboard</a></li>  
    <li><a href="Report.php">Report</a></li>
```

```

        <li><a href="Story.php">Story</a></li>
    </ul>
</div>
<div id="apDiv5">
<iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&p
athRef=.my_folders%2FTraffic%2Band%2BPort%2BVisualization&
;closeWindowOnLastView=true&ui_appbar=false&ui_navbar=
false&shareMode=embedded&action=view&mode=dashb
oard&subView=model000001845f75bd7a_00000002"
width="1400" height="700" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe></div>
<a href="home.php"></a>
<div id="apDiv1">
<h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>

<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3> <a href="Register.php">Sign up</a></h3>
</div>
</div><br><br><br><br><br>
</body>
</html>

```

## **Report.php**

```

<!DOCTYPE html>
<html lang="en">
<head>
<style>
body{
font: 14px sans-serif;
background-color: #333;
}

#apDiv1 {
position: absolute;

```

```
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;
background-color: #660066;
top: 1px;
left: 1px;
border: 3px solid gray;
padding: 10px;
}
```

```
#apDiv2 {
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
```

```
#apDiv3 {
position: absolute;
width: 138px;
height: 54px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}
```

```
#apDiv1 #apDiv2 h3 a {
color: #0F0;
}
```

```
#apDiv1 #apDiv3 h3 a {
```

```
color: #F00;
}
.justified {
text-align: justify;
}
```

```
#apDiv4 {
position: absolute;
left: 281px;
top: 28px;
width: 631px;
height: 36px;
z-index: 2;
}
```

```
</style>
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"
type="text/css">
<style type="text/css">
#apDiv5 {
position: absolute;
left: 63px;
top: 112px;
width: 1323px;
height: 731px;
z-index: 3;
}
</style>
<script src="SpryAssets/SpryMenuBar.js"
type="text/javascript"></script>
<meta charset="utf-8">
</head>
```

```
<body>
<div id="apDiv4">
  <ul id="MenuBar1" class="MenuBarHorizontal">
    <li><a href="Dashboard.php">Dashboard</a></li>
    <li><a href="Report.php">Report</a></li>
    <li><a href="Story.php">Story</a></li>
  </ul>
```

```

</div>
<div id="apDiv5">
<iframe
src="https://us3.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FReport&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=run&format=HTML&prompt=false" width="1200" height="600"
frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe></div>
<a href="home.php"></a>
<div id="apDiv1">
<h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>
<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3><a href="Register.php">Sign up</a></h3>
</div>
</div><br><br><br><br><br><br>
</body>
</html>

```

## **Story.php**

```

<!DOCTYPE html>
<html lang="en">
<head>
<style>
body{
font: 14px sans-serif;
background-color: #333;
}

#apDiv1 {
position: absolute;
width: 1645px;
height: 75px;
z-index: 1;
color: #39F;

```



```
background-color: #660066;
top: 1px;
left: 1px;
border: 3px solid gray;
padding: 10px;
}
#apDiv2 {
position: absolute;
width: 134px;
height: 54px;
z-index: 2;
left: 1224px;
top: 7px;
color: #F00;
text-align: center;
border: 3px;
padding: 10px;
}
#apDiv3 {
position: absolute;
width: 138px;
height: 54px;
z-index: 2;
left: 1385px;
top: 7px;
color: #000;
text-align: center;
font-weight: bold;
border: 3px solid black;
padding: 10px;
}

#apDiv1 #apDiv2 h3 a {
color: #0F0;
}
#apDiv1 #apDiv3 h3 a {
color: #F00;
}
.justified {
text-align: justify;
```

```
}
```

```
#apDiv4 {  
position: absolute;  
left: 281px;  
top: 28px;  
width: 631px;  
height: 36px;  
z-index: 2;  
}
```

```
</style>  
<link href="SpryAssets/SpryMenuBarHorizontal.css" rel="stylesheet"  
type="text/css">  
<style type="text/css">  
#apDiv5 {  
position: absolute;  
left: 63px;  
top: 112px;  
width: 1323px;  
height: 731px;  
z-index: 3;  
}  
</style>  
<script src="SpryAssets/SpryMenuBar.js"  
type="text/javascript"></script>  
<meta charset="utf-8">  
</head>
```

```
<body>  
<div id="apDiv4">  
  <ul id="MenuBar1" class="MenuBarHorizontal">  
    <li><a href="Dashboard.php">Dashboard</a></li>  
    <li><a href="Report.php">Report</a></li>  
    <li><a href="Story.php">Story</a></li>  
  </ul>  
</div>  
<div id="apDiv5">  
<iframe  
src="https://us3.ca.analytics.ibm.com/bi/?perspective=story&pathRe
```

```
f=.my_folders%2FStory&closeWindowOnLastView=true&ui_
appbar=false&ui_navbar=false&shareMode=embedded&a
ction=view&sceneId=model00000184744a68d7_00000001&sc
eneTime=0" width="1200" height="650" frameborder="0"
gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe></div>
<a href="home.php"></a>
<div id="apDiv1">
<h1><a href="home.php"><span style="width: 100px; height: 100px;
font-size: 36px; color: #F0F; font-family: 'Times New Roman', Times,
serif;"><strong> Home</strong></span></a> </h1>

<div id="apDiv2">
<h3><a href="Login.php">Sign in</a></h3></div>
<div id="apDiv3">
<h3> <a href="Register.php">Sign up</a></h3>
</div>
</div><br><br><br><br><br><br>
</body>
</html>
```