## Project 2: Public Transport Efficiency Analysis

**Objective:**

Our goal is to incorporate Machine Learning algorithms to improve the accuracy of the predictive model by continuously monitoring and training the ML Model for Public Transport Efficiency Analysis

**Project Definition:**

The project involves analyzing public transportation data to assess service efficiency, on time performance, and passenger feedback. The objective is to provide insights that support transportation improvement initiatives and enhance the overall public transportation experience. This project includes defining analysis objectives, collecting transportation data, designing relevant visualizations in IBM Cognos, and using code for data analysis.

## Phase 2: Innovation

1. Collect transportation data. Public transportation data can be collected from a variety of sources, such as automated passenger counting systems, GPS tracking devices, and passenger surveys. Once we have collected the data, we will need to clean it and prepare it for analysis. This may involve removing outliers, correcting errors, and converting the data into a format that can be easily analyzed.
2. Design relevant visualizations in IBM Cognos. IBM Cognos is a powerful data visualization tool that can be used to create interactive dashboards and reports. Visualizations can help us to identify patterns and trends in the data that would be difficult to see with the naked eye. For example, we could create a visualization that shows the average on-time performance of each bus route.
3. Use code for data analysis. In addition to IBM Cognos, we may also want to use code to perform more complex data analysis tasks. For example, we could write a script to identify the most common passenger complaints.

Here is a brief explanation of how to implement each step:

Define analysis objectives:

For example,  we are interested in improving the efficiency of bus routes, Which routes have the longest travel times?

- Which routes have the most stops?
- Which routes are the most crowded?
- Which routes have the highest rates of delays?

Answering these questions can help us to identify areas where the bus service can be improved.

## Collect transportation data:

Once we have defined our analysis objectives, we can start to collect the data we need. Public transportation data can be collected from a variety of sources, such as:

- Automated passenger counting systems (APC): APCs are devices that automatically count the number of passengers on a bus or train.
- GPS tracking devices: GPS tracking devices can be used to track the location of buses and trains in real time.
- Passenger surveys: Passenger surveys can be used to collect feedback from passengers about their experience with public transportation.

In addition to these sources, we may also be able to obtain public transportation data from local government agencies or transportation authorities.

## Design relevant visualizations in IBM Cognos:

Once we have collected and prepared our data, we can start to design visualizations in IBM Cognos. IBM Cognos offers a variety of visualization types, such as charts, tables, and maps. We can choose the most appropriate visualization type for each question we are trying to answer.

## Use code for data analysis:

In addition to IBM Cognos, we may also want to use code to perform more complex data analysis tasks. For example, we could write a script to identify the most common passenger complaints. Or, we could write a script to predict the number of passengers that will use a particular bus route on a given day.

There are a variety of programming languages that can be used for data analysis, such as Python, R, and SQL. The best programming language for we will depend on our skills and experience.

Once we have implemented all of these steps, we will have a comprehensive solution for analyzing public transportation data. This solution can be used to assess service efficiency, on-time performance, and passenger feedback. The insights gained from the analysis can be used to support transportation improvement initiatives and enhance the overall public transportation experience.