

Problem Definition and Design Thinking Document

Project Definition

The project aims to analyze public transportation data to evaluate service efficiency, on-time performance, and passenger satisfaction. The primary objective is to provide valuable insights that can support transportation improvement initiatives and enhance the overall public transportation experience. This comprehensive project includes the following key components:

1. Analysis Objectives:

- Define specific objectives for analyzing public transportation data.
- Primary objectives include assessing on-time performance, passenger satisfaction, and service efficiency.
- Define measurable key performance indicators (KPIs) related to these objectives.

2. Data Collection:

- Identify data sources and methodologies for collecting transportation data.
- Data sources may include schedules, real-time updates, and passenger feedback.
- Implement data collection processes to ensure regular and reliable data updates.

3. Visualization Strategy:

- Plan an effective strategy for visualizing insights derived from the data.
- Utilize IBM Cognos for creating informative and interactive dashboards and reports.
- Design visualizations that are user-friendly and can effectively communicate findings to stakeholders.

4. Code Integration:

- Determine areas where code can enhance the analysis process.
- Consider code for data cleaning, data transformation, and statistical analysis.
- Ensure code is well-documented, modular, and maintainable.

Design Thinking

Understanding the Problem

- The project's primary goal is to improve public transportation services.
- We aim to achieve this by analyzing data related to on-time performance, passenger satisfaction, and service efficiency.
- The insights derived from the analysis will guide decision-makers in implementing improvements.

Ideation and Approach

Analysis Objectives

- Define specific objectives to address the problem comprehensively.
- **Objective 1: On-Time Performance Assessment**
 - Measure and report the punctuality of public transportation services.
 - Analyze historical data to identify patterns of delays.
- **Objective 2: Passenger Satisfaction Evaluation**
 - Gather and analyze passenger feedback through surveys or online reviews.
 - Identify common pain points and areas for improvement.
- **Objective 3: Service Efficiency Analysis**
 - Assess the overall efficiency of transportation routes and schedules.
 - Optimize routes to reduce travel time and improve connectivity.

Data Collection

- Identify data sources:
 - Schedules and timetables from transportation authorities.
 - Real-time GPS data from vehicles.
 - Passenger feedback collected through surveys or online platforms.
- Develop data collection and update processes to ensure the availability of current data for analysis.

Visualization Strategy

- Utilize IBM Cognos for visualization:
 - Create interactive dashboards to monitor KPIs.
 - Design informative reports that provide insights at various levels of granularity.
- Incorporate user feedback to refine visualizations and ensure they align with the needs of decision-makers.

Code Integration

- Identify areas where code can enhance the analysis:
 - Implement data cleaning routines to handle missing or inconsistent data.
 - Transform data for visualization and analysis.
 - Perform statistical analysis to identify trends and correlations.
- Ensure code is well-documented and organized for ease of maintenance.

Implementation and Evaluation

- Execute the data collection, analysis, and visualization processes.
- Continuously monitor KPIs and gather feedback from stakeholders.

- Regularly update visualizations and reports to reflect the latest data.
- Evaluate the impact of any implemented improvements on public transportation services.

Conclusion

This problem-solving approach combines well-defined objectives, effective data collection, informative visualization, and code integration to address public transportation challenges. The success of this project will ultimately lead to improved transportation services and a better experience for passengers.