Guidelines

- Use this template to submit your Idea brief for the hackathon.
- The ideal size of the presentation should not be more than ***10 slides***.
- While in this stage the evaluation will only be made on the basis of the idea, you are welcome to add as many ***POCs*** and ***design concepts*** to support your ***idea***, if already prepared.
- The idea should be feasible and the team members should be capable enough, to come up with the prototype of the same idea if required.
- In case of queries drop in a mail at ***support@hack2skill.com***

Team Name : GEN EXPENDABLES

Problem Statement : Data-Driven Traffic Congestion

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Brief about the Idea:

Developing an AI-based system that can analyze traffic patterns, optimize traffic management, and reduce congestion in a city, with the goal of creating a product for the GEN AI BUILDATHON.

Opportunity :

Visualize Traffic Volume, Density, and Speed for Optimal Capacity. Say goodbye to Congestion Duration and Queue Length as you explore the number of cars on the road, the speed of traffic, and the location of traffic congestion across different parts of the city on a dynamic daily, weekly, and monthly basis!"

How different is it from any other existing ideas out there?

While there might be existing solutions that offer some of these features individually, the combination of real-time data visualization, comprehensive traffic metrics, location-specific congestion mapping, flexibility in time analysis, optimization and capacity planning, user-friendly interface, and integration with existing infrastructure sets the proposed solution apart from traditional traffic management systems in the market

How will it be able to solve the problem?

Our solution for the AI hackathon utilizes Tableau's distinct features to revolutionize traffic management. With robust forecasting, seamless real-time data integration, interactive visualizations, flexible customization, collaborative functionalities, and scalable design, our solution optimizes traffic and reduces congestion like never before.

POCs

PoC 1: Develop a system that can identify areas of congestion and suggest ways to improve traffic flow. This could be done by using AI to analyze traffic data and identify patterns that indicate congestion. The system could then suggest ways to improve traffic flow.

PoC 2: Develop a system that can predict traffic congestion. This could be done by using AI to analyze historical traffic data and identify patterns that can be used to predict future congestion. The system could then provide alerts to drivers and city officials about upcoming congestion so that they can take steps to mitigate it.

PoC 3: Develop a system that can recommend alternative routes to drivers. This could be done by using AI to analyze traffic data and identify the best routes for drivers to take. The system could then provide drivers with real-time recommendations for alternative routes.

Design Concepts

System architecture: The system should be designed as a distributed system, with multiple components that can communicate with each other. This will allow the system to scale to handle large amounts of data and to operate in real-time.

Data collection: The system should collect data from a variety of sources, such as traffic cameras, GPS data, and sensors embedded in vehicles. This data should be stored in a central database so that it can be easily accessed by the other components of the system.

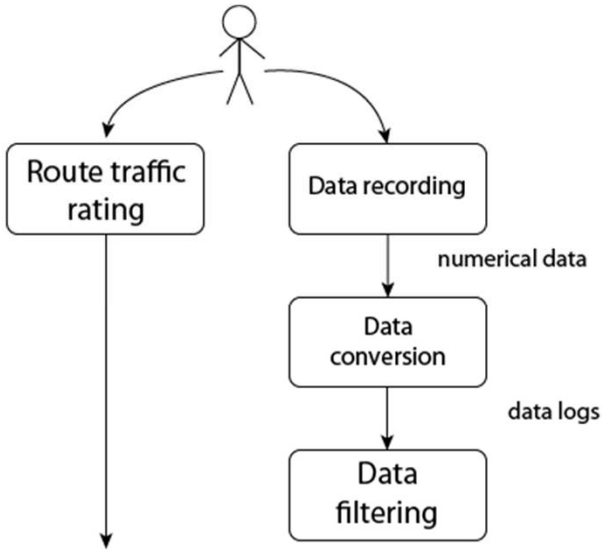
Data analysis: The system should use AI to analyze the collected data and identify patterns that can be used to optimize traffic management. For example, the system could identify areas of congestion and suggest ways to improve traffic flow.

Traffic management: The system should be able to make real-time adjustments to traffic signals, lane closures, and other traffic controls. This will help to reduce congestion and improve traffic flow.

User interface: The system should have a user-friendly interface that allows drivers and city officials to interact with the system. The interface should be easy to use and understand, and it should provide users with the information they need to make informed decisions about their travel.

List of features offered by the solution :

Will use traffic data as input, and use features in Tableau to make a dashboard for presentation.

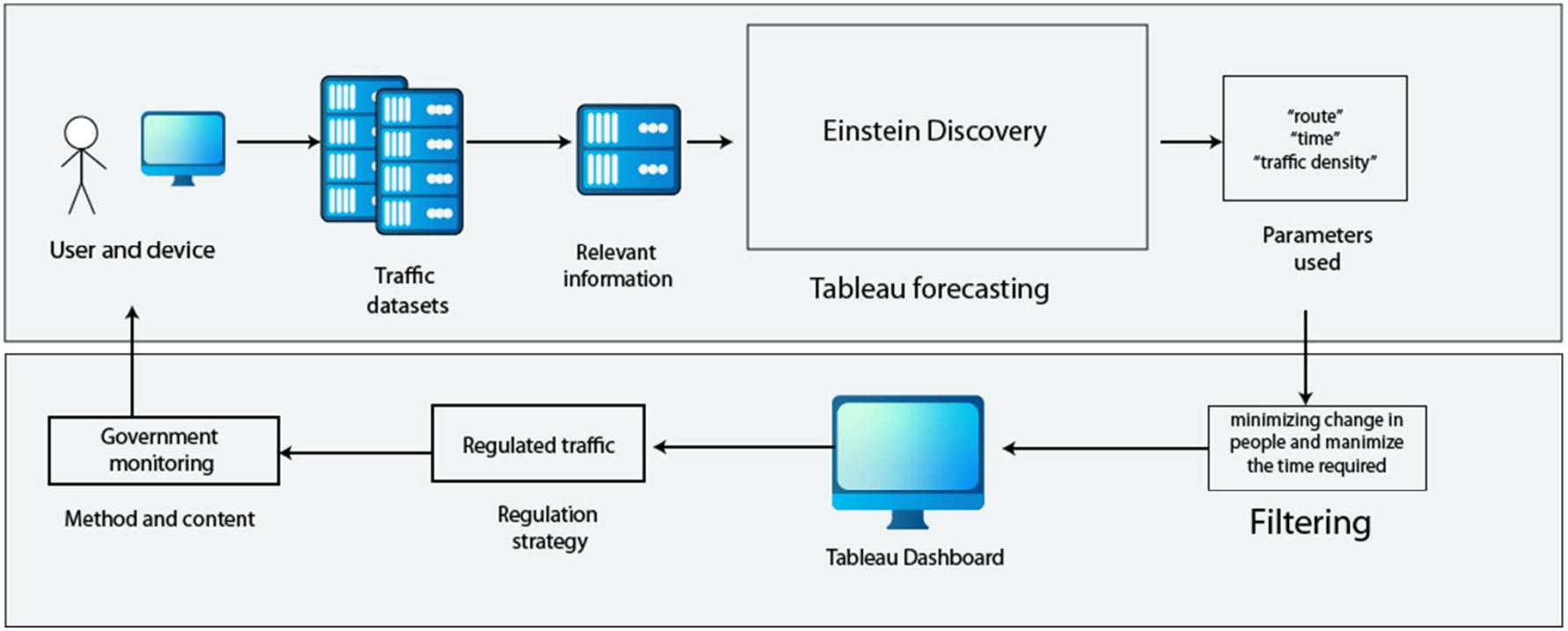


Overview of classification and filtering pipeline

	A	B	C	D	E	F	G	H	I
1	Location	Date	Time	Traffic Volume	Traffic Density	Traffic Speed	Traffic Capacity	Congestion Duration	Queue Length
2	Intersectic	15-07-2023	8:00 AM	1000	200	40	1200	30 minutes	10
3	Highway B	15-07-2023	12:30 PM	2000	300	60	2500	45 minutes	20
4	Intersectic	15-07-2023	5:15 PM	1500	250	35	1800	20 minutes	5

Process Flow Diagram / Use-case Diagram:

Process Flow Diagram



Business Logic of the solution :

- People should be interested in and support the idea of using Tableau dashboards for traffic congestion solutions because it enables data-driven decision making, cost savings, reduced environmental impact, improved productivity, and enhanced business operations.
- Business logical solutions include route optimization, demand forecasting, customer segmentation, supply chain visibility, and collaboration with stakeholders.
- Quantitatively, investing in Tableau dashboards can lead to cost savings, increased revenue, improved productivity, and a better commuting experience.

Technology used : Tableau, Tableau forecasting.

Estimated cost of/after implementing the solution

Parameters	Rough Estimation (in INR)
Data Source and Volume	50,000 - 1,00,000
Data Preparation and Cleansing	20,000 - 40,000
Real-time Data Streaming	30,000 - 60,000
Dashboard Complexity	60,000 - 2,00,000
Customization and User Experience	40,000 - 1,50,000
Hosting and Infrastructure	20,000 - 50,000
Integration with Cloud Services	30,000 - 70,000
Security and Privacy	30,000 - 80,000
Support and Maintenance	10,000 - 30,000 per month
Development Team Expertise	80,000 - 2,00,000

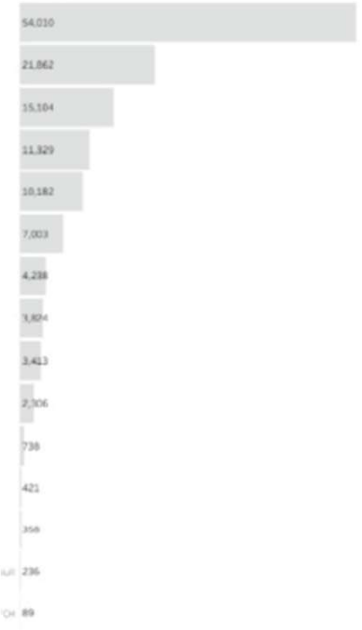
Steps / Working to USE Dashboard

- Select the Filters like Year, Quarter, Region
- According to the filters selected the dashboard will display Information.
- When you click on one city in the map the whole dashboard will filter data according to the city selected Example: Bangalore
- It helps to get info like city traffic distribution, prediction based on date, and the top 10 areas with the largest congestion duration by factor 1 and factor 2.
- Scatter plot tells us Traffic at different levels of Roads
- Heat map gives info regarding traffic congestion in different months

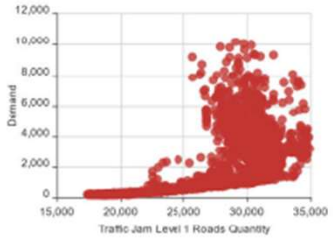
Intelligent Traffic Analytics for Seamless Urban Mobility

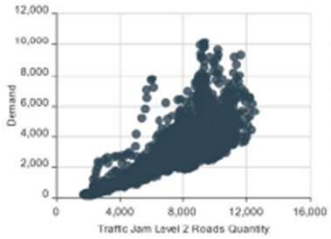
KPI

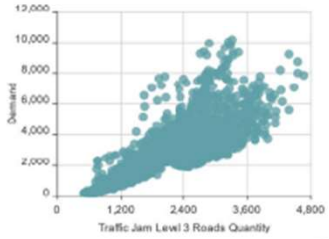
15113	2hrs	value	value	value	value
Traffic denisty	Average time	parameter3	parameter4	parameter5	parameter6

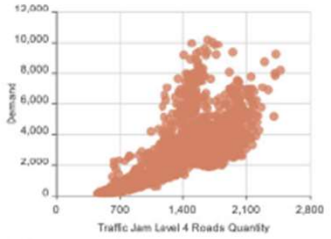


top 10 areas with the longest congestion duration by factor 1 and factor 2





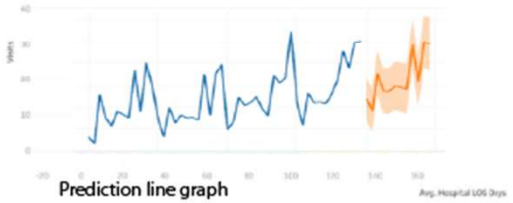




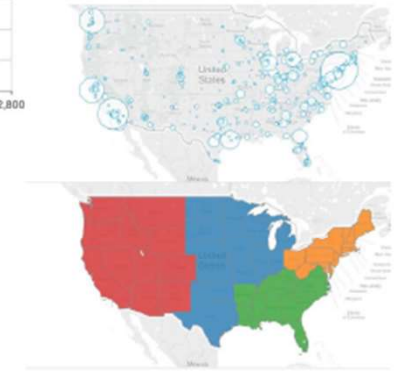
Scatter plot about the traffic at different level roads

Heat map about the congestion levels

filters



Prediction line graph



City distribution map

nexus venture partners | THE PRODUCT FOLKS

GENAI RUSH <BUILD/>ATHON

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