PUBLIC TRANSPORTATION OPTIMIZATION

Phase 1 ; problem definition and design thinking

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PROBLEM STATEMENT

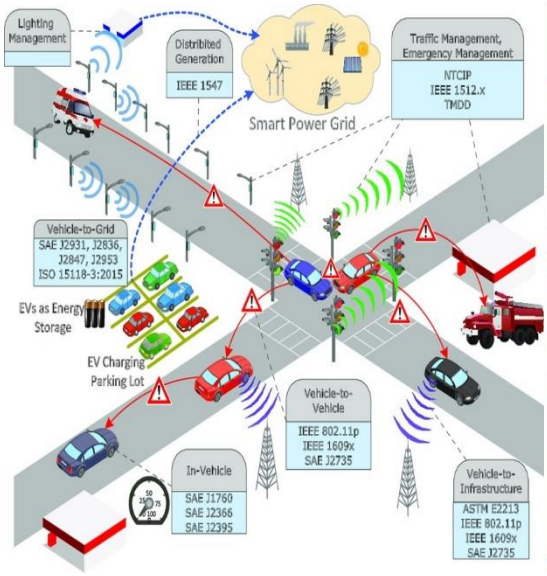
Problem Statement: "Our city's current public transportation system is plagued by low ridership, frequent service disruptions, long waiting times, and inadequate accessibility. This inefficiency results in increased traffic congestion, longer commute times, and environmental pollution. We need to revamp our public transportation system to make it more attractive, reliable, and sustainable, catering to the diverse needs of our residents while reducing our carbon footprint."

1. **Low Ridership**: Our city's public transportation system suffers from consistently low ridership numbers, indicating a lack of attractiveness and convenience.
2. **Unreliable Services**: Frequent service disruptions, delays, and unpredictable schedules have eroded passenger trust and satisfaction.
3. **Congestion**: The reliance on personal vehicles due to public transit issues has led to worsening traffic congestion, negatively impacting both commuters and the environment.
4. **Long Wait Times**: Passengers experience significant waiting times between transportation options, discouraging their use of public transit.
5. **Inadequate Accessibility**: The current system lacks inclusivity and accessibility for individuals with disabilities, limiting its utility and reach.
6. **Environmental Impact**: Increased car usage due to public transit problems contributes to air pollution and exacerbates environmental concerns.
7. **Inefficiency**: The system is inefficient in terms of route planning, leading to overlapping routes, underused services, and wasted resources.

DESIGN THINKING

Empathize: In this initial stage, you seek to understand the problem from the perspective of the end-users and stakeholders. This involves conducting interviews, observations, and surveys to gather insights and develop empathy for the people you are designing for. The goal is to uncover their needs, pain points, and aspirations.

1. **Define**: Based on the information gathered in the empathy stage, you define the problem or challenge in a clear and actionable way. This is where you distill the insights into a problem statement that serves as a guiding point for the rest of the process. It's important to frame the problem in a way that is specific, actionable, and user-centric.
2. **Ideate**: During the ideation stage, you generate a wide range of creative ideas and potential solutions to the defined problem. Encourage brainstorming and creativity without judgment. Techniques like brainstorming sessions, mind mapping, and sketching can be useful for idea generation. The goal is to explore a variety of possibilities.
3. **Prototype**: In this stage, you create low-fidelity prototypes or mock-ups of your potential solutions. These prototypes are rough, low-cost representations of your ideas that allow you to quickly test and gather feedback. Prototyping helps to visualize concepts and make them tangible for evaluation.
4. **Test**: Testing involves getting your prototypes into the hands of users or stakeholders to gather feedback. This can be done through usability testing, surveys, or other feedback mechanisms. The goal is to understand how well your solutions meet user needs and to identify areas for improvement.
5. **Iterate**: Based on the feedback received during testing, you make iterative refinements to your prototypes and solutions. This is an ongoing process, and you may go through multiple rounds of prototyping and testing to continually improve your design.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Distributed Generation
IEEE 1547
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SAE J2931, J2836, J2847, J2953
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