Q&A with Sparkyville representative-

Q:Does the mayor want to keep the taxis because of their appearance and symbolism, or because he genuinely wants the actual vehicle?

A:“I would like to keep the iconic yellow taxi look. I’m all for innovating our vehicles.”

Q: *Are we allowed to innovate other aspects besides the vehicles?*

A:“I am all for modifying other aspects of the strip, but I believe that the vehicles are our main focus and our main money maker.

Q:What safety features would you like to see in the design?

A:The autonomous vehicles must stop at red lights correctly as well as be able to keep the passengers strapped in and contained.

Interviews

Interview #1- The transportation within Vegas (a similar city) was very congested and difficult to get around. Parking was either very limited or outrageously expensive. The streets were constantly backed up with traffic as well. He needs a fast mode of transportation that doesn’t involve traffic and waiting a while. He also needs something with a large space, since sitting with his sister gets crammed. When walking, he felt unsafe with the amount of congestion on the strip as well as sketchy figures intimidating him

Interview #2- The transportation methods within Boston are much different than in a city like Vegas. My interviewee used the subway as a source of transportation. Subways are a fast and an easily accessible method to get to the final destination. He liked how they are free from traffic which can help with quick trips. One thing he did not like about it was that subways don’t operate for 24 hours. They are also not always available and will only take you around the city and not to any suburban areas. Overall, the subway is a very efficient way of transportation that is also eco-friendly.

Interview #3- The transportation within the Michigan island called Mackinac Island doesn’t use cars at all. The island is very small which is a reason why cars are not available there. My interviewee's method of transportation there was a bike. They also have horse carriages there which is unique compared to any other places. She likes her source of transportation because everything she needs is close and using a bike is perfect. She also likes it because it is a good way to get some exercise. The methods of transportation all depend on the location and the size of the area. In order to find the right source of transportation, the location needs to be understood.

Interview #4- Mena's Mom: She had visited The Strip in Las Vegas, a similar area. From her experience, Vegas was very exciting, bright and busy. While she was there, she and her friends drove a friend's car around. The traffic was very congested and slow. She said it was very comparable to the traffic in Los Angeles, California. Her only complaint was how hot it was on the Vegas Strip. She didn't really mind the traffic in her opinion. She suggested that it may be helpful to research any strategies the city of LA might be using to minimize their traffic issues to help solve our problem.

Research

The Las Vegas Monorail is a quick mode of transportation that allows a maximum of 222 passengers at a time. The monorail is serviced and cleaned multiple times a day. The monorail runs every 4 minutes and stops at a total of 7 stops near the popular casinos and hotels. The monorail expenses are 13.45 for an unlimited day pass or 57.50 for an unlimited week pass. Children 5 years old or younger ride for free. Las Vegas Monorail

A study conducted by RAND Corporation researchers identified different strategies to reduce traffic congestion in Los Angeles. They deduced that to solve the problem, there would either need to be an increase of supply of road space or a decrease of demand for peak-hour automotive travel. They found the more realistic way to deal with the congestion would be to deal with the demand for driving during rush hours. In the end they found that multiple strategies would need to be implemented to solve LA's traffic problems in the long run. These solutions included high occupancy toll (HOT) lanes, Bus Rapid Transit (BRT), and paired one-way street conversions. BRT's are bus only lanes that help buses get to their destination quicker. HOT lanes "can maintain free-flowing travel speeds (60 to 65 mph) during peak travel hours while carrying up to twice the volume that congested general-purpose lanes do."

Customer Discovery

The target customer and user is going to be large groups of people wanting to travel along the strip of Sparkyville. The typical age demographic of tourists and people in Sparkyville tends to be adults in their late 20s and 30s. The payer would be the company that decides to pick up the idea. The population of Sparkyville tends to be there for partying and having a good time. Many of them are also typically wealthy and favor luxury transportation with entertainment included in their transportation.

Problem Statement- Our design needs to be a source of fast transportation for tourists and citizens of Sparkyville to travel down the 12-block distance of the Sparkyville strip.

Requirements-

- The design shall be “automated” and drive fully without a driver
- The design shall fit a minimum of 5 riders
- The design shall run from renewable solar energy
- The design shall travel down the 12-block strip of Sparkyville within 15 minutes
- The design shall have a storage compartment

Criteria

- The design has a wheelchair-accessible ramp
- The design resembles the look of a van
- The design has a power box or power tracker
- The design has a battery pack
- The design has a motor controller
- The design has an electric motor
- The design is light in weight

Brainstorming

The idea we have for the body style is a van-like design since we need to fit 5 people. Seating-wise, we were thinking 2 seats in the front and 3 seats in the back. For the luggage, we will have a trunk behind the 3 seats. When it comes to propulsion, first we will have the solar panel on top of the car with a bit of a tilt because in order to generate the maximum power, we need it to be perpendicular to the sun. From there, the energy generated will be moved to the power box. Then that energy will be transferred into electricity by the battery pack. Using the motor controller, that energy will be sent to the motor which will turn the wheels. We were thinking of putting this all right under the car or under the seats. The wheels will be oriented to only go straight since doing more than that will only complicate it more. For technology enhancements, we were thinking of using carbon fiber since we need it to be as light as possible. We also were thinking of implementing basic aerodynamics to reduce drag which will ultimately make the car faster.

Sources

https://www.sciencelearn.org.nz/images/2182-solar-car-sketch

https://chat.openai.com/c/ab0f2e61-d74a-4ffc-965a-f63a3886204e

https://www.rand.org/pubs/research_briefs/RB9385.html#:~:text=Often%20called%20congestion%20pricing%2C%20these,spaces%20at%20the%20busiest%20times.