



PARKING FOR THE FUTURE

TEAM HACK JACK

AGENDA



Existing System



Parking Problems



Our Proposal – Jet Park



Technology and Services



Expected Results

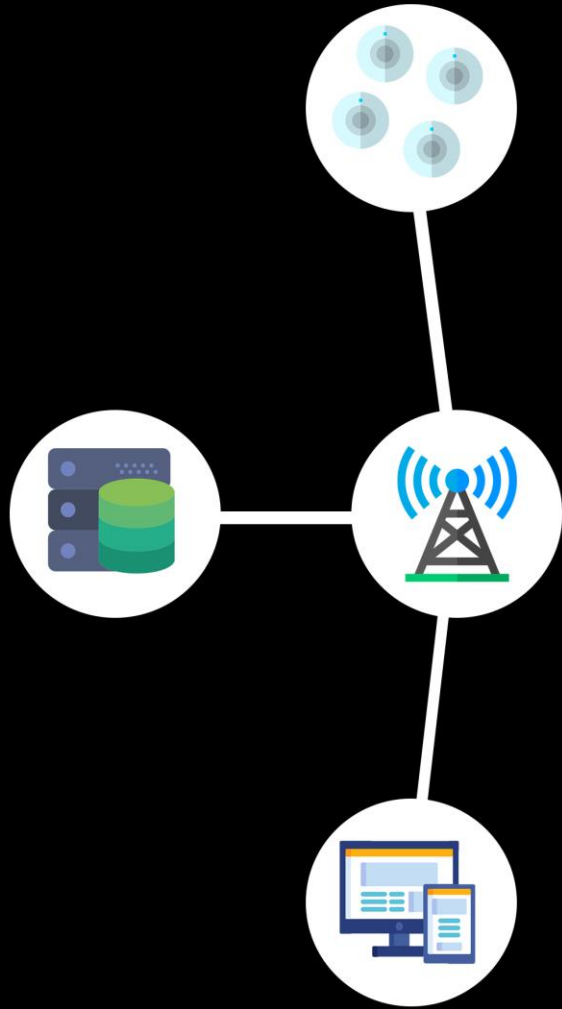


Future Enhancements



Appendix

EXISTING SYSTEM



To manage and administer various existing car parks in the city, present system is based on :

1. WSN is dispersed in a parking area to collect all vehicle data and transfer them to the base station
2. Infrared sensors and smart meters capture information that is further sent to the parking management center. Parking guidance system with LED display screens show how many spaces are available
3. Other commonly used technologies include Global Positioning System, machine vision, multi-agent mediums with mobile, visual cameras, and algorithms

GENERAL PARKING PROBLEMS



INCOMPLETE
LIST OF
PARKING LOTS



STRUGGLE TO FIND
AN OPEN PARKING
SLOT IN
BUSY PARKING
AREAS



WASTE OF FUEL
DURING DETOURS
IN SEARCH FOR
PARKING SPACE



IDLE PARKING CAPACITY
DURING OFF-PEAK
HOURS
CHALLENGE TO FIND
PARKING SPACE IN PRIME
LOCATIONS



CONFUSION IN
LOCATING YOU
R VEHICLE
IN LARGE
PARKING LOT



INCOMPLETE LIST
INCONSISTENT
OR INACCURATE
PRICES
NO GRADING
SYSTEM

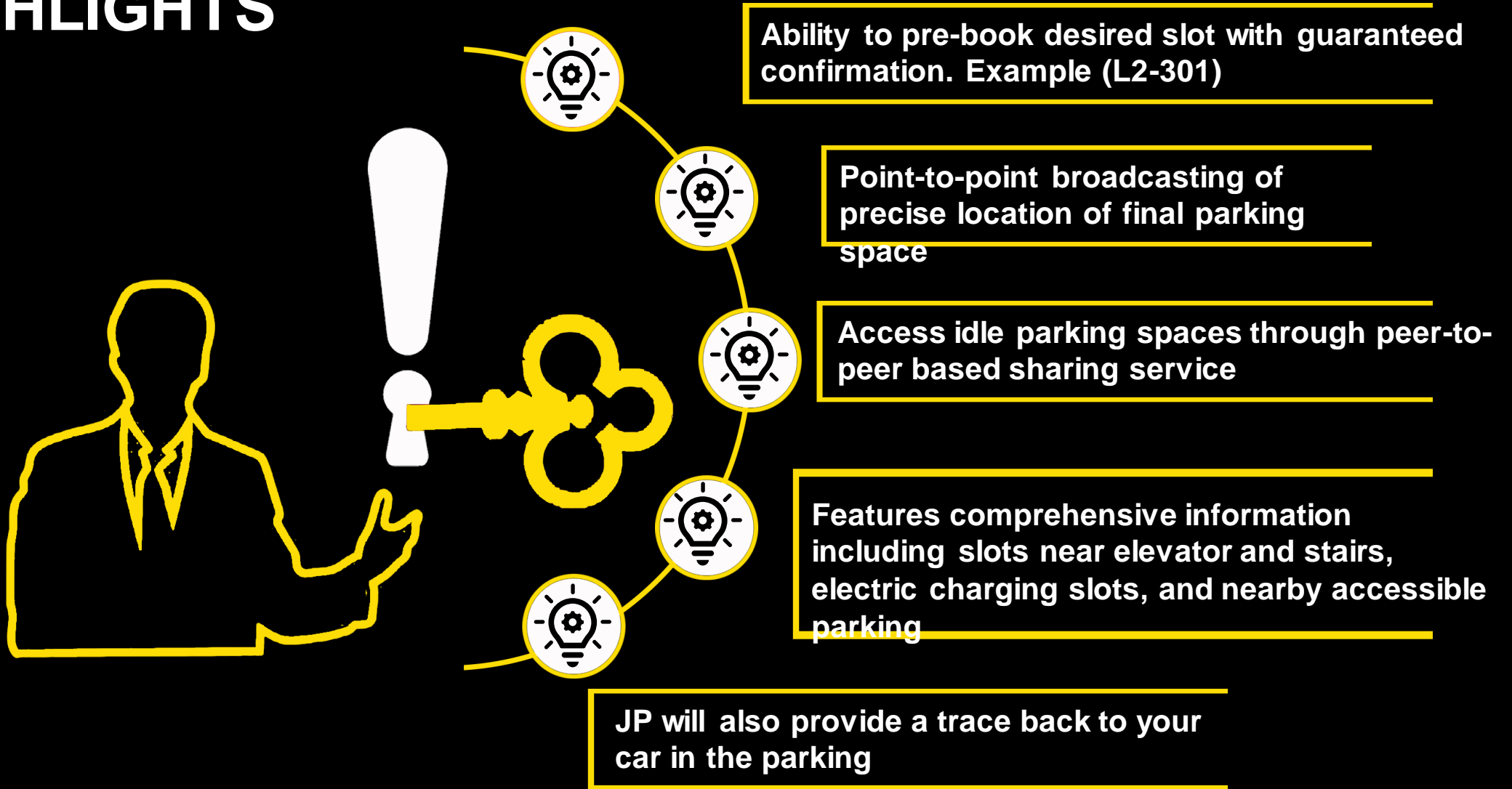


LOSS IN CURRENT
REVENUE MODEL



ECONOMIC AND
OPPORTUNITY
LOSSES DUE TO TIME
WASTED IN PARKING

OUR PROPOSAL HIGHLIGHTS



OUR PROPOSAL



SOLUTION OBJECTIVES

- To provide customers with a user-friendly application that solves parking challenges in an efficient, sustainable, and cost beneficial manner
- To bridge the existing gap between customers and parking lot owners



TARGET AUDIENCE

Vehicle owners and renters in Singapore

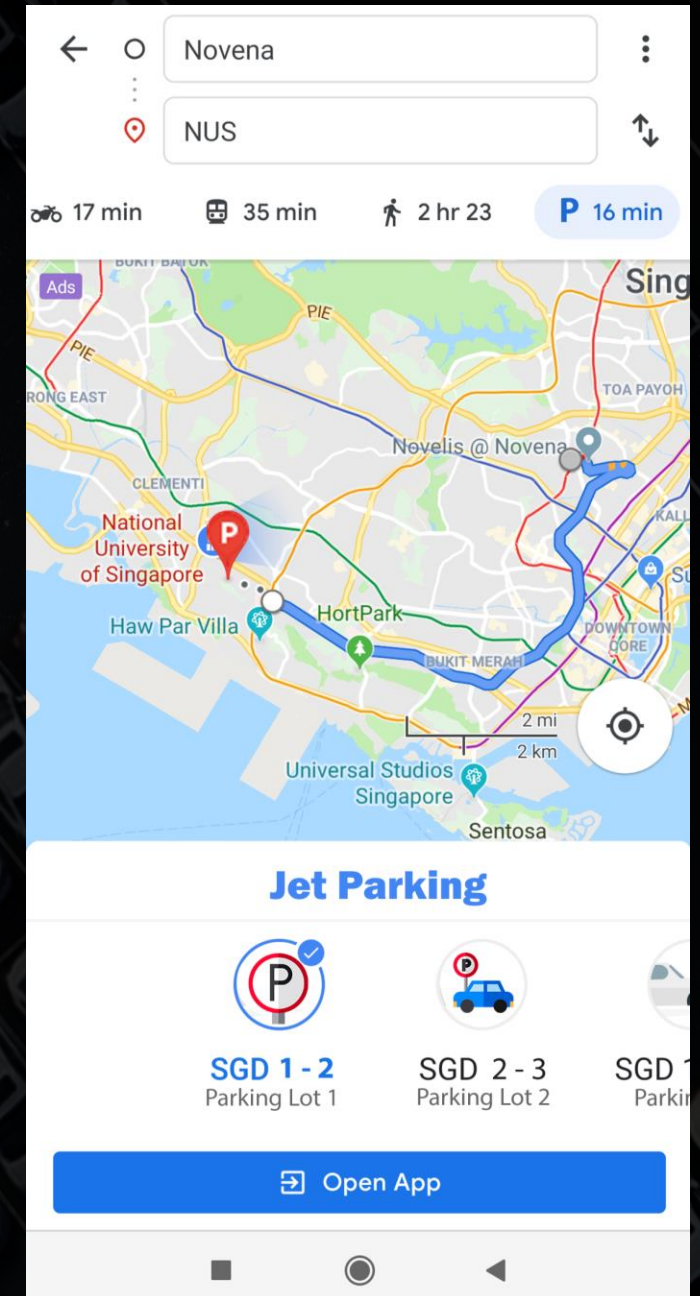


COMMUNITY INFLUENCE

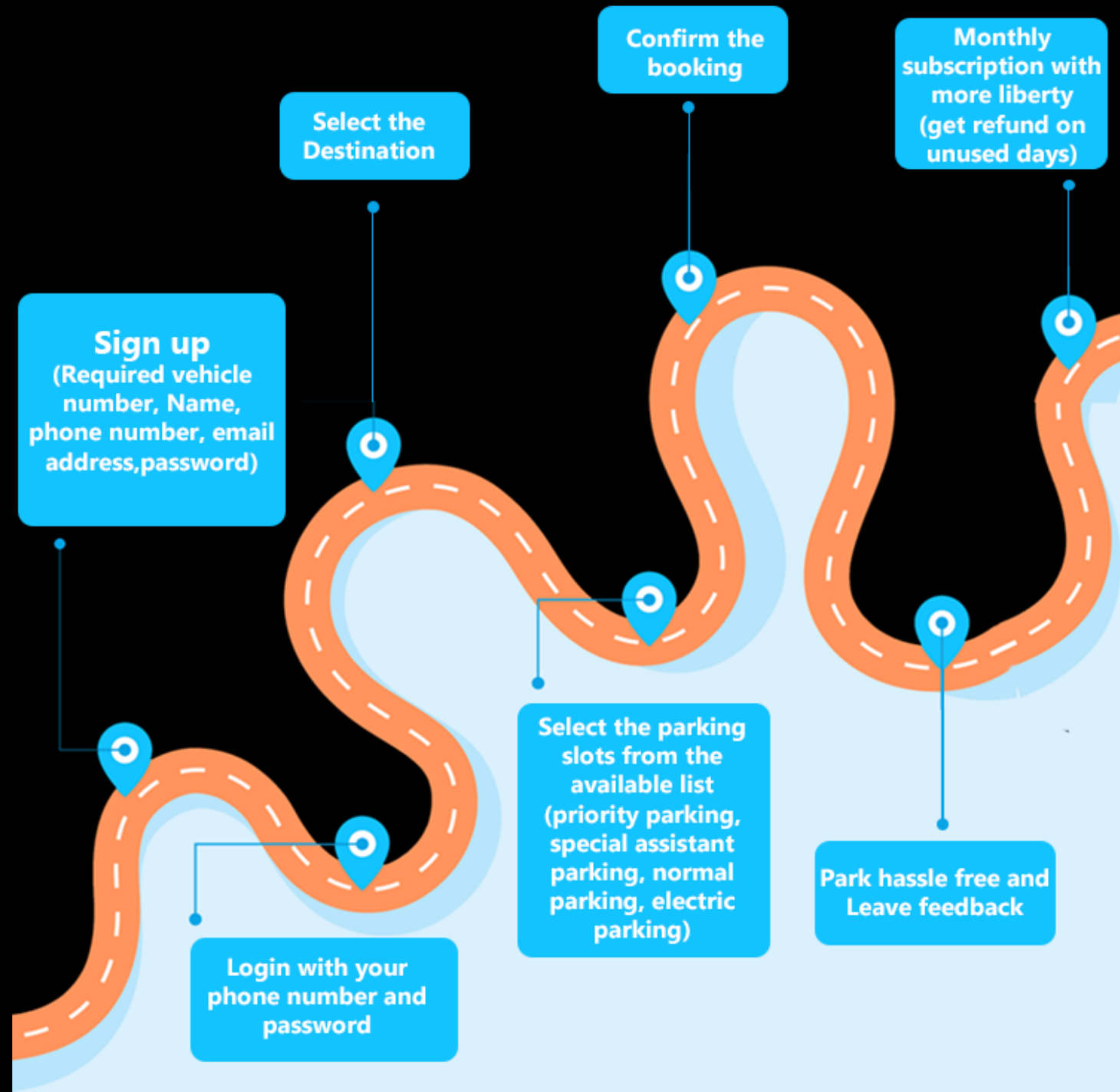
- Environmental impact - reduce carbon emissions with end-point navigation (For example, L2-501 represents lot number 501 on the second floor)
- Traffic congestion - less reroutes with optimal navigation
- Engagement in the sharing economy - a solution for shared-based parking

FEATURES OF JP

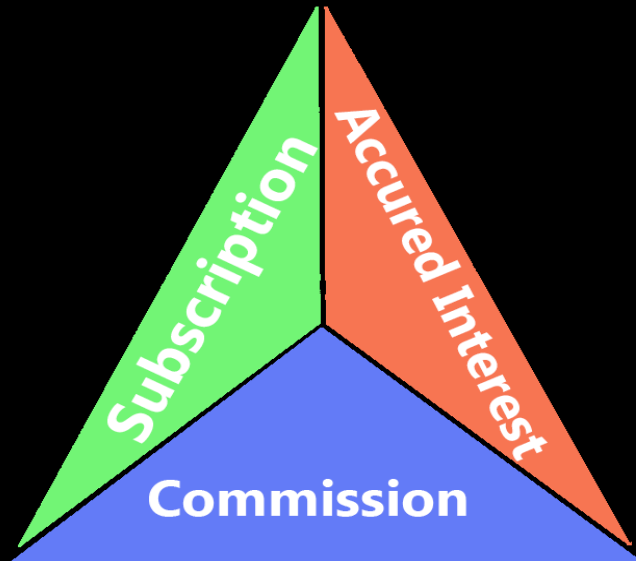
- Mobile application
- Nearest available parking
- Sort by distance, price, public reviews
- Utilize virtual assistant Alexa's skills
- Intuitive UI in conjunction with Google Maps
- Hourly alerts for price increases
- Easily trace back your parked car
- Recommend public transit if no nearby slots available
- Refund in credits for early exit/unused parking spaces only if allocated to new customer



CUSTOMER JOURNEY



PRICING MODEL

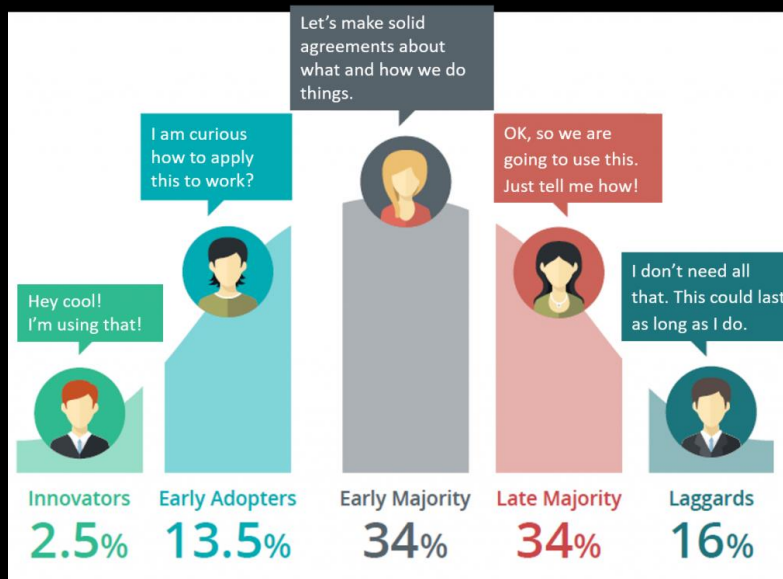


Recurring revenues are primarily generated via:

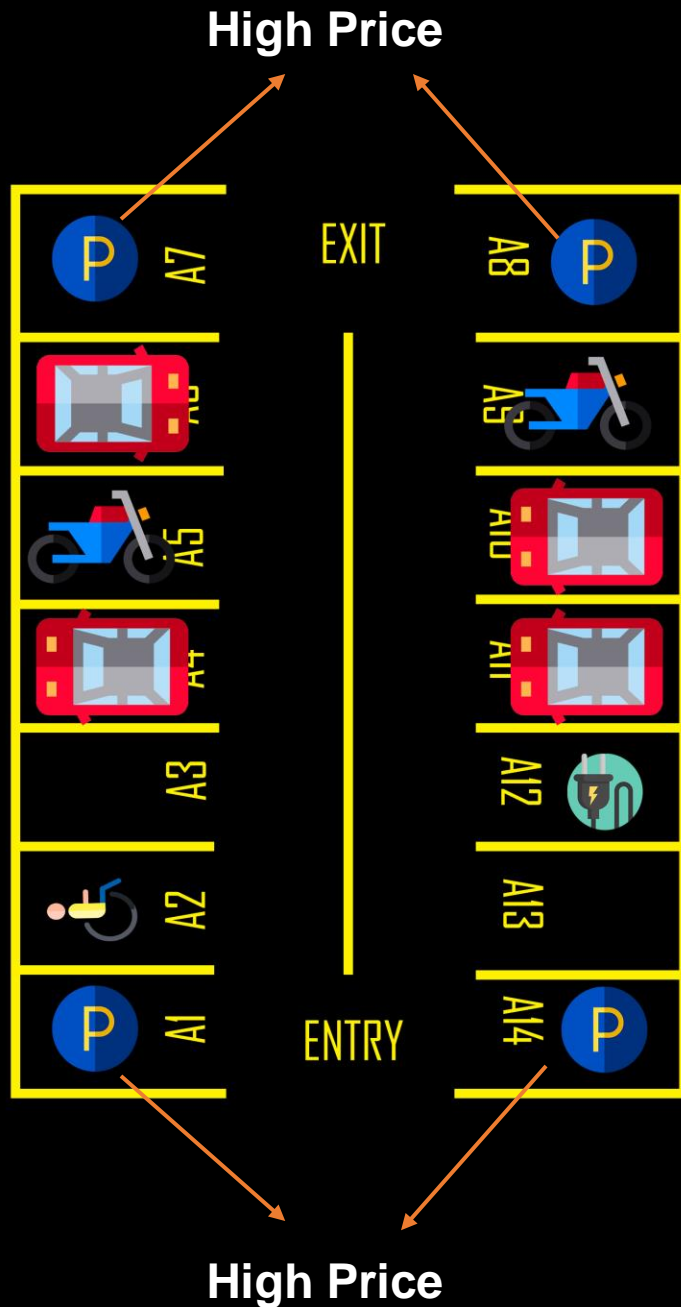
1. Percentage of commission per transaction
2. Interest income on advance payments*
3. Monthly subscription service

Growth strategy in the initial phase:

- Gain traction of first-phase user base by offering special rates for students and employees.
- They are typically willing to adopt and explore new technologies to solve their daily parking problems.
- Provide notification of in-app promotional discounts from retailers at commercial areas. This is a way to pilot new ideas gradually starting from a smaller setting.



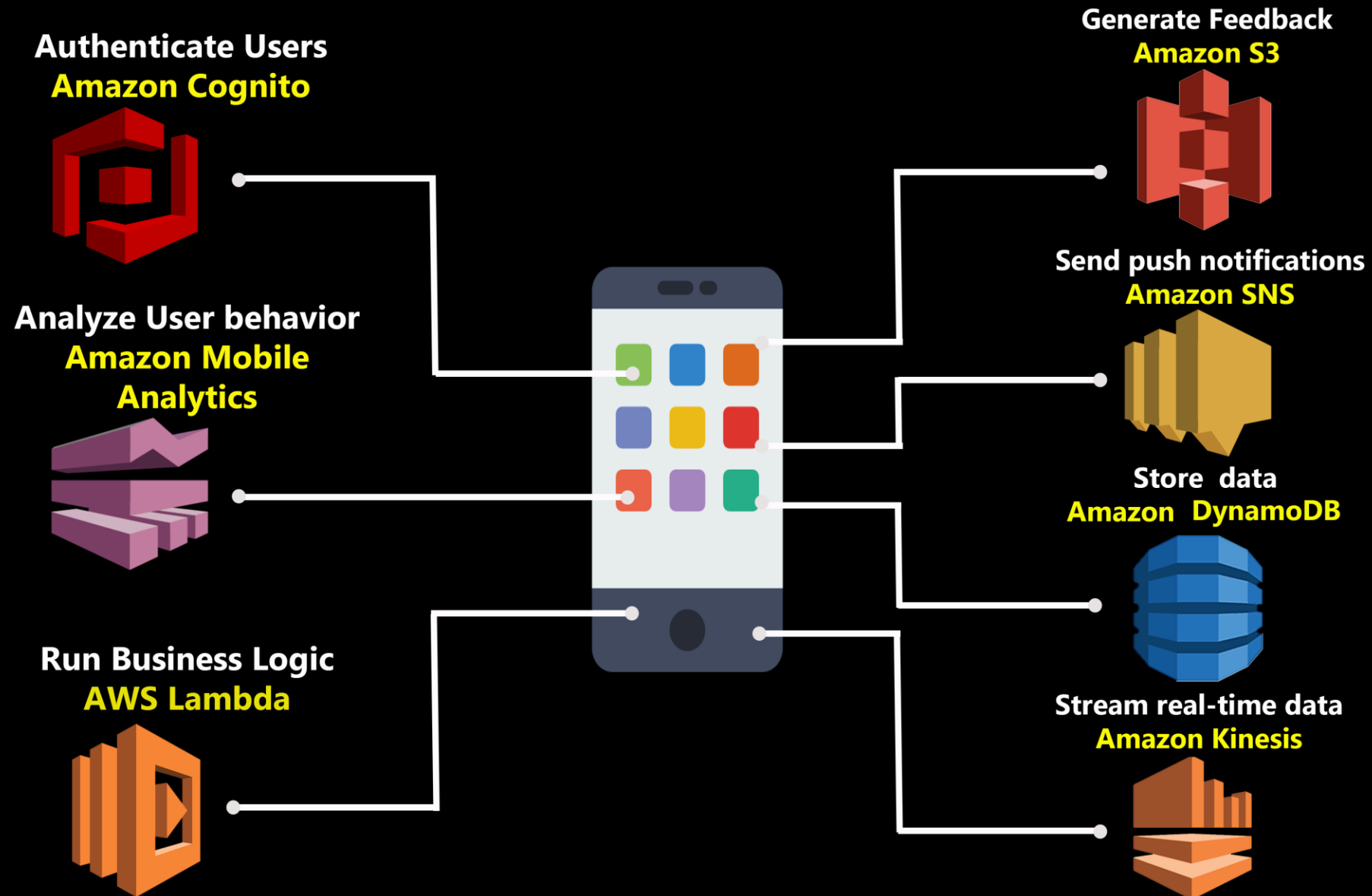
Note: Reimbursement of credits after matching shared service will be automatically debited at the end of each week. Hence, we aim to utilize this opportunity to accrue interest income.



DYNAMIC PRICING

- Unlike existing smart parking services, JP offers dynamic pricing: a demand-responsive pricing model that manages parking on a block-by-block, time-band by time-band basis
- This flexibility will accurately and continuously reflect any changes in demand, which is beneficial for applying prediction and machine learning models
- Ultimately, the more consumers are utilizing the platform, the better we can tailor our service in a virtuous cycle

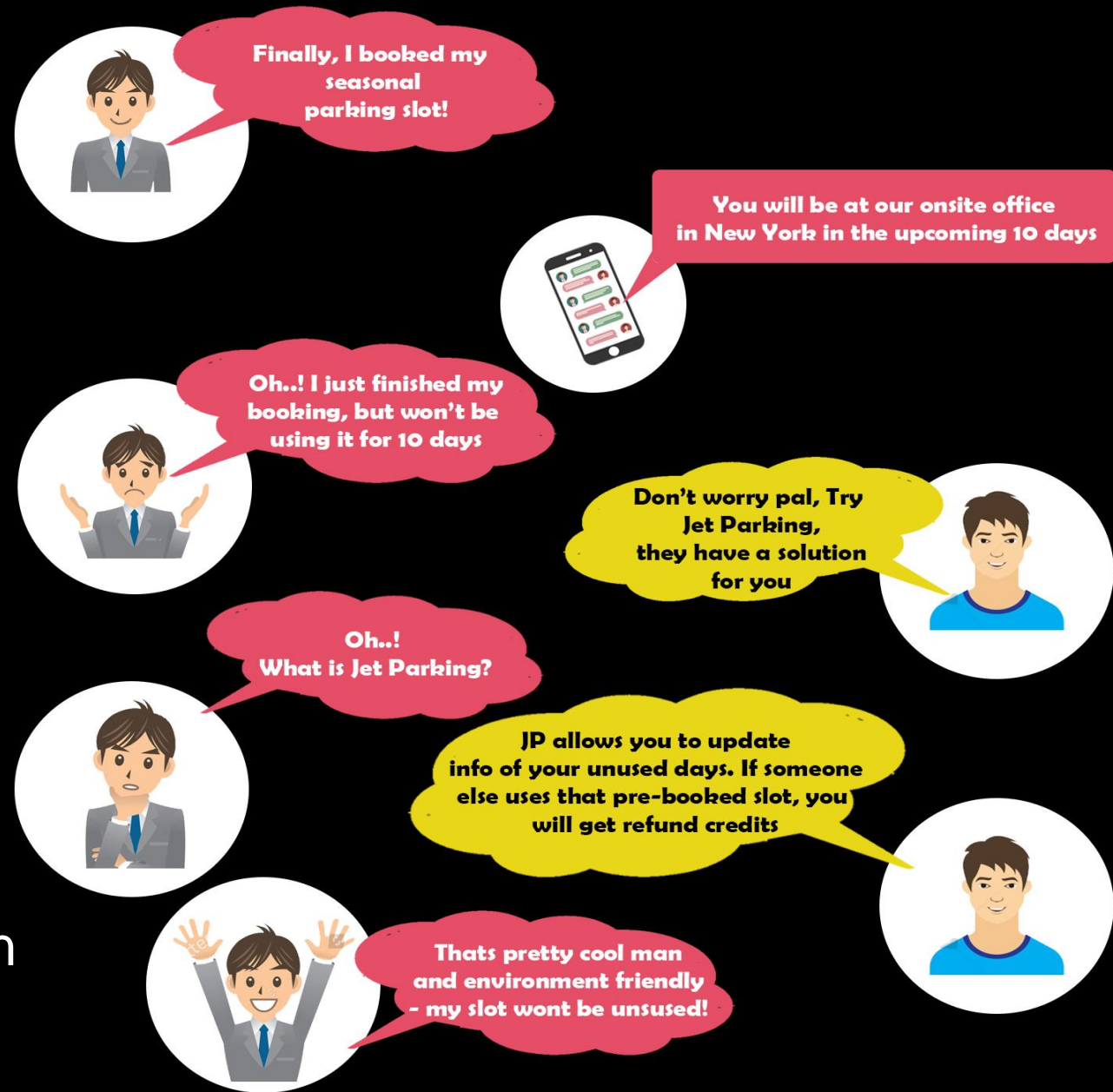
TECHNOLOGIES AND SERVICES USED



ONBOARDING EXPERIENCE

Jet Park is centred around a unique concept of sharing-based parking. This empowers our users with more flexibility, especially in the case of seasonal parking.

JP is also valuable from the perspective of parking operations and management, since business owners can gain an additional source of income.



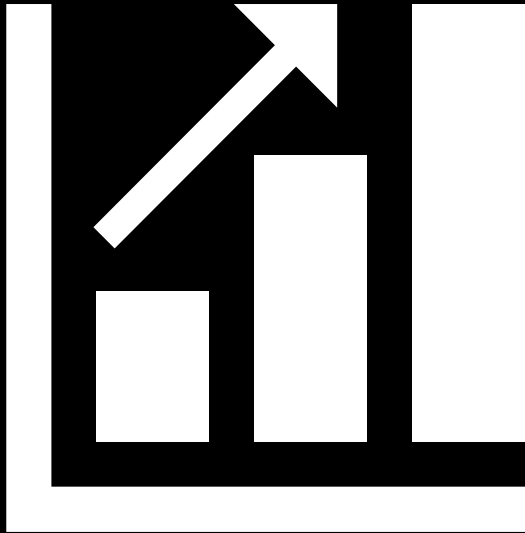
FUTURE ENHANCEMENTS

- LED-lit pathways for driver guidance inside the parking lot
- Additional supplementary services (*refueling, car wash)
- Navigation control from the phone (climate and media control)

*HDPE Jerry cans be used to carry fuel in the parking lot



EXPECTED RESULTS



- Growth in the revenue model of the SG parking
- Customer satisfaction
- More utilization of the parking space
- Reduction in carbon emissions environmentally friendly
- Optimize parking

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- Deloitte Insights (2018, November 2). *The future of parking: can providers find a space in the new mobility system?* Retrieved from <https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/future-of-parking-new-mobility-ecosystem.html>
- Rahayu, Y.; Mustapa, F.N. (2013, July 2). *A secure parking reservation system using GSM technology*. International Journal of Computer and Communication Engineering.
- Yang, J.; Portilla, J.; Riesgo, T. (2012, October 25). *Smart parking service based on wireless sensor networks*. In Proceedings of the IECON 2012—38th Annual Conference on IEEE Industrial Electronics Society, Montreal, QC, Canada.
- LTA Datamall, One Motoring
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APPENDIX 1

The primary goal that we envision for JP is to optimize the amount of limited parking spaces in Singapore in an environmentally sustainable and cost beneficial manner. In order to achieve this, we would like to focus on the “sharing” aspect in three primary areas: HDB, commercial, and other prime destinations. For customers holding seasonal HDB parking passes, we aim to make their experience seamless and minimize the number of hours/days when the parking spot is idle. As a key incentive, the unused time will be matched with demand from other surrounding customers - both the pass holder and lot owner will be provided with financial gains, while the customer eager for parking space is charged a reasonable fee. Secondly, we would like to creatively resolve unrealized demand for parking spaces in commercial business districts by providing an intuitive mobile application environment: the end user is able to select and reserve his or her designated parking space at a slightly higher than market rate in exchange for convenience and predictability. Lastly, prime sites such as schools and office areas tend to have lower foot traffic during non-working hours. This provides a clear opportunity to match idle resources with the most willing consumers.

APPENDIX 2

To demonstrate our first case, suppose Leo currently pays on average SG\$30 per month for his HDB seasonal parking pass. He anticipates that 10 days will be unused due to certain travel arrangements. Instead of leaving the parking spot unused, JP will provide a platform for customer Nina to utilize in exchange for SG\$10 total, which will be equally distributed to Leo and the lot owner. JP's business model relies on services fees as a percentage of total booking costs. In the second example, users who have signed up for JP's monthly subscription service will be offered a seamless parking reservation experience at commercial business districts. At the touch of their fingertips, consumers will easily be able to book the designated space at the desired destination. Changes made in advance will also be offered in order to limit variation in schedules. Lastly, prime locations including schools and office areas frequently see a large drop in foot traffic during the weekends and non-working hours. Similarly, we aim to match idle parking spaces with customers who are visiting nearby destinations.