Project Summary (v1.1)

This document is intended to provide a summary understanding of the high-level vision of your project goals.

Title	IPark Platform
Project Title	IPark
Project Description	IPark is reshaping the parking sector with a smart management system designed to increase profits for space owners. The system simplifies bookings and automates payments, significantly enhancing operational efficiency. Key analytics offer actionable insights, optimizing lot utilization and strategy. Integrated marketing tools help to effectively fill spaces, and top-tier security protocols ensure safe transactions. With IPark, parking lot owners gain a user-friendly, revenue-boosting solution that delivers convenience and reliability. **Data visualization Information:** IPark offers a transformative approach to parking management by emphasizing advanced data visualization, which provides parking space owners with deep insights. For instance, by revealing peak occupancy times, owners can tailor their staffing and operational costs effectively. Detailed revenue tracking identifies which spots are most lucrative, guiding owners on where to focus marketing efforts or even consider infrastructure investment. This strategic intelligence not only sharpens day-to-day efficiency but also steers long-term business development, leading to enhanced revenue streams and an optimized customer experience. **Feedback and Rating Systems:** IPark integrates a nuanced feedback mechanism, where drivers can rate their experience. If a rating falls at or below four stars, the user is prompted with predefined options to specify the issue, such as "Ease of Access," "Payment Process," or "Space Availability." This targeted feedback gives lot owners a clear direction for improvements, directly addressing concerns that may otherwise hinder repeat business. By systematically refining these areas based on user ratings, owners can elevate service quality, fostering

	higher satisfaction and encouraging customer loyalty, which is instrumental in driving up revenue. **24-Hour Advanced Reservation:** IPark offers a 24-hour advanced reservation system, enabling drivers to book parking spaces up to a day in advance. **Offline Mode:** IPark features an offline mode, which allows users to access essential information such as parking location, parking spot number, date and time even when they have limited or no internet connectivity. **Convenient Payment Method:** IPark provides a convenient payment method, allowing users to settle their parking fees seamlessly through the application. This ensures hassle-free transactions and eliminates the need for cash payments, out-dated paper based tickets and making the parking process more efficient and secure. **Reservation Management:** IPark provides users with the flexibility to modify or cancel their bookings (there is a limitation for cancellation: users can cancel their bookings 5 hours prior to their bookings). Reservation areas are separate from the other zones of the parking. **Application based Check-In Check-Out System:** IPark simplifies the parking process with an easy check-in and check-out system through application by eliminating significant costs associated with traditional hardware systems, including entry and exit equipment, payment kiosks, and associated maintenance expenses. **Notification System:** In the IPark application, a robust notification system is in place to enhance the user experience. Users with reservations will receive a reminder notification 10 minutes prior to their booked time. When the exact reservation time arrives, they will receive another notification, prompting them to check in. Users have a 15-minute window to complete this check-in process; otherwise, the reservation will be automatically canceled. Furthermore, for all users, once their parking time is up, they will receive a check-out notification. After users check out, the parking

	spot becomes available for other drivers to book, ensuring efficient space utilization and a smooth parking process for all.
Problem/ Opportunity Assessment *	*Please describe current state problem/opportunity that describes the nature and extent of the problem (factual, quantified, concise), or that outlines a chance for advancement or progress.*

Problem:

- High Hardware Costs for parking owners:

- Parking owners currently face significant costs associated with traditional hardware systems, including entry and exit equipment, payment kiosks, and associated maintenance expenses.

- Revenue Maximization and Space Utilization Challenges:

- Space owners find it challenging to maximize their revenue and have limited insight into how effectively their parking spaces are utilized.

- Difficulty Finding Parking:

- Drivers encounter difficulties when trying to find available parking, particularly during peak hours and special events, leading to inconvenience and stress.

- Outdated Payment Methods:

- The use of old-fashioned payment methods, such as cash payments, adds an extra layer of inconvenience and inefficiency to the parking experience.

Opportunity:

-Software-Centric Solutions:

- The high costs of traditional hardware systems for parking owners open the door to develop software-based or app-centric solutions. By shifting to a digital platform, you can eliminate or significantly reduce the need for physical equipment, thereby lowering setup and maintenance costs for parking owners.

-Seamless Digital Payments:

- As outdated payment methods persist, there's an opportunity to integrate seamless digital payment options, like mobile wallets, NFC payments, or even subscription-based models for frequent users.

	-Enhanced User Experience: ● Leverage the difficulties faced by drivers as an opportunity to provide an unmatched user experience. This could be through easy navigation **- Enhanced Convenience**: ● The system can offer easy check-in and check-out options, making the parking experience more convenient, especially in the context of post-pandemic concerns. **- Parking space utilization:** ● Comprehensive data visualization and analytics tools empower space owners. ● Valuable data insights into parking space utilization and revenue. ● Informed decision-making to maximize profits. **- Customer Satisfaction:** ● Feedback and rating system ensures continuous improvement of services. ● Higher customer satisfaction. **- Convenience and Efficiency:** ● Advanced reservation features, offline accessibility. ● Notification system keeps users informed and sends reminders for their check-in check-out ● Easy to use, and efficient dashboard
Desired Project Outcomes/ Requirements*	*Define how this project shall address a business need, e.g. the business problem or opportunity described above; describe what the beneficiary must be able to do / receive from the solution*

Addressing Revenue Maximization and Space Utilization Challenges:
- Parking owners will receive data visualization reports that empower them to gain insights into parking usage and revenue.

Addressing Difficulty Finding Parking:
- Drivers will benefit from a 24-hour advanced reservation system, which allows them to secure parking spots in advance.
- This feature reduces the inconvenience and stress associated with finding available parking during peak hours and special events.

Addressing Lack of Advanced Features in Traditional Systems:
- Both parking owners and drivers will receive a solution that offers advanced features, including an easy check-in and check-out system through application.

Addressing Outdated Payment Methods:
- Users will receive a modern and convenient payment method within the solution, eliminating the need for outdated payment methods like cash.
- This makes the parking experience more efficient and user-friendly.

Addressing High Hardware Costs for Parking Owners:
- Parking owners will benefit from the implementation of cost-effective hardware solutions, which reduce upfront and maintenance costs associated with traditional hardware systems.
- The solution streamlines operations, reduces operational expenses, and potentially increases revenue.

Capitalizing on the Opportunity for Enhanced Revenue Generation:
- The solution will attract more drivers to parking spaces by offering advanced reservation features and a convenient payment method.
- This will maximize revenue for parking owners.

Enhancing User Experience and Convenience:
- Drivers will experience a seamless and stress-free parking process with features like 24-hour advanced reservations, offline mode, and easy check-in/check-out.

	Ensuring Customer Satisfaction: - Both parking owners and users will benefit from a feedback and rating system that allows continuous improvement of services. - This leads to higher customer satisfaction and loyalty. **Facilitating Real-Time Communication:** - The solution will keep users informed through a robust notification system, ensuring timely updates on reservations, payment status, and reminders for check-in and check-out. - This real-time communication ensures a smooth and stress-free parking experience. In conclusion, the project addresses the identified business needs and opportunities by providing a comprehensive parking reservation system that empowers both parking owners and users to enhance revenue, improve the user experience, and make the parking process more efficient, convenient, and data-driven.
Key Deliverables to be produced by students*	*Boundaries of Work for Student Effort*

Prototyping and Conceptual Design:
Students are expected to develop an initial prototype of the software solution, emphasizing user experience and interface design. This will serve as the blueprint for the final product.

Core Functionality Development:
Students will focus on building out the main functionalities of the application, such as user registration, spot reservation, reporting unauthorized parking, and integration of the AI-driven camera system (if feasible at this stage).

Database Design:
Designing and setting up a robust database system that will store user details, parking spot reservations, license plate data, and records of unauthorized parking incidents.

User Testing & Feedback:
After the initial development, students should facilitate user testing sessions, gather feedback, and make necessary adjustments to the software based on this feedback.

Basic Analytics Integration:
Integrate basic data analytics tools to capture user behavior and unauthorized parking incidents. This will not be the full-fledged analytics module but a foundational one that can be expanded upon.

Documentation:
Comprehensive documentation detailing the system architecture, codebase, user manual, and potential areas of improvement or expansion.

Project Management and Collaboration:
Students are expected to actively collaborate, regularly update progress, and manage the project using agile methodologies like Scrum, ensuring timely deliveries and iterations.
Exclusions (Internal Effort/Post-Student Engagement):

Advanced Analytics and Data Visualization:
While students will set up basic analytics, in-depth data visualization tools and advanced analytics integration will be handled internally or by specialized teams.

Integration with External Systems:
Any integration with third-party systems, payment gateways, or external databases will be undertaken internally.

Deployment and Scaling:
The deployment of the application in a real-world setting, ensuring scalability, redundancy, and high availability will be managed internally.
Security Audits and Compliance:

	Comprehensive security audits, vulnerability assessments, and ensuring compliance with data protection regulations will be managed by internal teams. Ongoing Maintenance and Support: After the students complete their portion, the internal team will take over for continuous maintenance, bug fixes, and providing user support. Marketing and Outreach: Strategies to promote the application, partnerships with parking owners, and outreach to potential users will be managed internally. The goal is for students to provide a solid foundation and a working prototype, while specialized and complex tasks, especially those that require deep integration, high security, or extensive market knowledge, will be managed internally.
Desired Start Date	15 sep 2023
Desired End Date	29 March 2024
Attachments	*List attachments that support project description*