IPARK

Project Vision Document

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1. Introduction

This document serves as a foundational blueprint for the IPark platform, a cutting-edge reservation parking system crafted by IFusion.

1.1. Purpose

The purpose of this document is to gather, assess, and outline the essential high-level requirements and functionalities for the IPark platform, a reservation parking system developed by IFusion. This document centers on identifying the key capabilities sought by both our stakeholders and the prospective users of the IPark platform, as well as elucidating the reasons underlying these requirements. The specific methods through which the IPark platform addresses and fulfills these needs will be elaborated upon in subsequent use-case and supplementary specification documents.

1.2. Scope

The scope of the IPark platform project, undertaken by IFusion, encompasses several key areas. Within scope are the development of reservation management features, secure user authentication processes, integration of payment gateways, real-time availability information, and the creation of user-friendly web and mobile interfaces. Additionally, the project includes the implementation of reporting and analytics functionalities to provide insights into parking space utilization. Out of scope for this project are physical infrastructure aspects such as construction and maintenance of parking facilities, traffic management, city planning, vehicle maintenance, and coordination with emergency services within parking areas. This project concentrates on the digital facets of parking reservation and management, ensuring a seamless and userfriendly experience for our customers.

1.3. Definitions, Acronyms, and Abbreviations

Term	Explanation
IPark	IPrk stands for Intelligent Parking, Referring to a smart or technologically advanced parking system.
Stakeholders	Individuals or groups in the success of the IPark platform, including users, parking facility owners, and regulatory authorities.
Reservation Management Features	Functionalities within IPark that enable users to reserve parking spaces in advance.
Secure User Authentication Processes	The methods and protocols used to verify the identity of users accessing the platform.

Integration of Payment Gateways	The incorporation of payment processing services to facilitate transactions related to parking reservations.
Real-Time Availability Information	Live data updates regarding the availability of parking spaces within the platform.
User-Friendly Interfaces	Intuitive web and mobile interfaces designed to enhance the user experience.
Reporting and Analytics Functionalities	Features that provide insights into parking space utilization, including reporting on usage patterns and analytics to inform decision-making

1.4. References

Name	Link
Evaluating parking reservation policy in urban areas: An environmental perspective	https://www.sciencedirect.com/science/article/abs/pii/S1361920911001465
A reservation-based parking behavioral model for parking demand management in urban areas	https://www.sciencedirect.com/science/article/pii/S0038012122002786
Smart Parking Reservation System Based on Distributed Multicriteria Approach	https://www.tandfonline.com/doi/full/10.1080/08839514.2017.1378275
The worst place to park in Canada: Parking ticket traps, unfair tickets (CBC Marketplace)	https://www.youtube.com/watch?v=tB24lj71VPA

2. Positioning

2.1. Business Opportunity

The business opportunity addressed by the IPark project lies in meeting the growing demand for convenient and efficient parking solutions in urban areas. As urbanization continues, the need for accessible and stress-free parking options becomes increasingly critical. IPark aims to capitalize on this opportunity by providing a technologically advanced platform that simplifies parking space discovery and reservation, benefiting both users and stakeholders.

2.2. Problem Statement

The Problem of	Limited Parking Availability in Urban Areas
affects	drivers, local businesses, and city planning authorities,
the impact of which is	congestion, increased stress, and inefficient use of urban space.
a successful solution would be	to provide a user-friendly platform that optimizes parking space utilization, reduces congestion, enhances the convenience of parking, and supports urban planning efforts, ultimately leading to improved quality of life in urban

Table 1 Problem Statement

2.3. Product Position Statement

For	Registered and Unregistered Drivers seeking convenient and secure parking solutions.
Who	Face challenges finding and reserving parking spaces in urban areas.
The IPark platform	is a cutting-edge parking reservation and management system that provides real-time parking space information and reservations.
That	Simplifies the process of finding and reserving parking spaces, enhancing user convenience and reducing the stress of parking in busy areas.
Unlike	Traditional parking methods that rely on luck and on-site availability.
Our product	Offers a seamless and user-friendly interface, real-time space availability, and integration potential with transportation services, providing a unique and hassle-free parking experience for drivers in urban environments.

Table 2 Product Position Statement

2.4. SWOT Analysis

<Reference: https://www.businessballs.com/strategy-innovation/swot-analysis/)

Strengths	Weaknesses
Innovative Technology: The IPark platform leverages innovative technology to provide real-time parking information and reservations, offering a unique and valuable service to users.	**Technical Challenges:** Maintaining the platform's uptime and ensuring data security can be technically complex and resource-intensive.
User-Friendly Interface: The platform offers a user-friendly interface that simplifies the process of finding and reserving parking spaces, enhancing the user experience.	**Regulatory Compliance:** Ensuring compliance with various parking regulations and securing approvals from regulatory authorities can be time-consuming and complex.
Data-Driven Decision-Making: Detailed parking utilization data enables data analysts and planners to make data-driven decisions for urban planning and resource allocation.	**Initial User Adoption:** Attracting an initial user base and encouraging users to adopt the platform may be a challenge, especially in areas with established parking habits.
Opportunities	**Threats**
Market Growth: The demand for convenient parking solutions is growing, presenting opportunities for the platform to expand its user base.	**Competition:** The parking reservation and management sector may have established competitors, posing a challenge to market entry and growth.
Business Partnerships: Collaborations with local businesses, transportation providers, and other stakeholders can lead to mutually beneficial partnerships.	**Regulatory Changes:** Evolving parking regulations or unexpected legal changes can impact the platform's operations and compliance.
Data Monetization: The platform can explore opportunities to monetize the valuable parking utilization data it collects by offering insights to third parties.	**Security Risks:** The platform may face security threats, such as data breaches or cyberattacks, which can undermine user trust and data integrity.

3. Stakeholder and User Descriptions

Registered and Unregistered Drivers:

Key Problems: Drivers face challenges finding available parking spaces in congested urban areas, leading to stress, wasted time, and increased fuel consumption.

Solution: IPark addresses these challenges by providing real-time information on parking space availability and allowing users to reserve spots in advance, reducing stress and optimizing their parking experience.

Parking Facility Managers:

Key Problems: Facility managers often struggle with inefficient reservation management, leading to underutilization of parking spaces and revenue loss.

Solution: IPark offers tools for efficient reservation management, enabling managers to optimize space utilization, increase revenue, and streamline parking operations.

Regulatory Authorities:

Key Problems: Regulatory authorities lack access to real-time data on parking utilization, making it challenging to enforce parking regulations effectively and plan urban development.

Solution: IPark provides compliance reports and real-time data to regulatory authorities, aiding in better enforcement of parking regulations and supporting informed urban planning decisions.

Business Owners:

Key Problems: Business owners struggle to attract customers due to parking issues, and validating parking for patrons can be cumbersome.

Solution: IPark helps business owners attract customers by promoting their locations as parking-friendly and streamlines the validation process, improving the overall customer experience.

Transportation Providers:

Key Problems: Transportation providers want to enhance the travel experience for their customers but lack integrated parking options.

Solution: IPark enables transportation providers to integrate parking options into their services, offering a seamless end-to-end travel experience for their customers.

Data Analysts and Planners:

Key Problems: Data analysts and planners need accurate parking utilization data for urban planning but often rely on outdated or incomplete information.

Solution: IPark provides real-time and comprehensive parking data, empowering data analysts and planners to make data-driven decisions for effective traffic and parking management.

Platform Administrators:

Key Problems: Administrators need to ensure the platform's uptime, data security, and user support while maintaining data integrity.

Solution: IPark offers robust tools and support mechanisms to administrators, ensuring platform stability, user satisfaction, and data security.

3.1. Stakeholder Summary

Stakeholder Name	Represents	Role
Registered and Unregistered Drivers	End users of the IPark platform who seek parking solutions.	They require convenient and stress-free parking options in urban areas, and the IPark platform aims to meet their needs.
Parking Facility Managers	Employees managing parking facilities partnering with IPark.	They need tools for efficient reservation management and monitoring to optimize parking facility operations.
Regulatory Authorities	Government agencies overseeing parking regulations and urban planning.	They rely on compliance reports and data for enforcing regulations and making informed urban planning decisions.
Business Owners	Owners or managers of local businesses.	They are interested in attracting customers through the platform and validating parking reservations for their patrons.
Transportation Providers	Ride-sharing companies and public transit services.	They seek to integrate parking options into their services, enhancing the overall travel experience for their customers.

Table 3 Stakeholder Summary

3.2. User Summary

User Name	Description	Responsibilities	Stakeholder
Registered Drivers	Individuals who use the IPark platform	- Search for available parking spaces - Reserve parking spaces - Make payments for reservations - Provide feedback	End Users (Drivers)
Unregistered Users	Visitors who access the platform without registration	- Explore available parking options - View parking availability - Register for an account - Access basic platform features	End Users (Drivers)
Parking Facility Managers	Employees managing parking facilities	- Monitor and manage reservations - Check-in and check-out users - Ensure facility maintenance and security	Parking Facility Owners
Regulatory Authorities	Government agencies overseeing parking	- Review and approve platform compliance with parking regulations - Monitor data for urban planning and enforcement	Regulatory Authorities
Business Owners	Owners or managers of nearby businesses	- Attract customers through platform promotions - Validate parking reservations for their patrons	Local Businesses
Transportation Providers	Ride-sharing companies, public transit	- Integrate parking options into their services - Enhance the overall travel experience for their customers	Transportation Providers
Data Analysts and Planners	Urban planning and data analysis experts	- Analyze parking data for urban planning - Make data-driven decisions related to traffic and parking management	Data Analysts and Planners

User Name	Description	Responsibilities	Stakeholder
Platform Administrators	Platform management and support staff	- Ensure platform uptime and security - Handle user inquiries and support requests - Maintain the platform's integrity	Technology Partners

Table 4 User Summary

4. Stakeholder Requirements

ID	Requirement	Stakeholder
R1	The system shall allow users to search for parking spaces based on location, date, and time.	Registered Drivers
R2	Users should be able to view real-time parking space availability for selected locations.	Registered Drivers
R3	The system shall provide secure user authentication methods, including username and password, for account access.	Registered Drivers, Unregistered Users
R4	Users must have the option to register for an account to access advanced features such as reservations and payments.	Unregistered Users
R5	Parking facility managers should have access to reservation management tools for checking-in/ checking-out users and monitoring reservations.	Parking Facility Managers
R6	Regulatory authorities must have access to compliance reports and data for parking regulation enforcement and urban planning.	Regulatory Authorities
R7	Business owners should be able to validate parking reservations made by their patrons through the platform.	Business Owners
R8	Transportation providers should be able to integrate the platform's parking options into their services.	Transportation Providers
R9	Data analysts and planners must access detailed parking utilization data and analytics for urban planning and decision-making.	Data Analysts and Planners
R10	Platform administrators should ensure high system uptime, handle user support, and maintain data integrity and security.	Platform Administrators

Table 5 Stakeholder Requirements

5. System Features

ID	Feature	Stakeholder Requirement ID
F1	Parking Space Search	R1
F2	Real-Time Availability Display	R2
F3	User Authentication	R3
F4	User Registration	R4
F5	Reservation Management Tools	R5
F6	Compliance Reporting	R6
F7	Business Validation	R7
F8	Integration with Transportation Services	R8
F9	Parking Utilization Analytics	R9
F10	System Administration	R10

Table 6 System Features

6. Assumptions

Stakeholder Cooperation: It is assumed that all stakeholders, including regulatory authorities, parking facility owners, and transportation providers, will cooperate and engage in discussions to support the implementation and success of the IPark platform.

Data Privacy Compliance: Assumption is made that the IPark platform will adhere to data privacy regulations, such as GDPR, and that users' personal information will be handled securely and in accordance with applicable laws.

Technical Compatibility: It is assumed that the technology partners and providers selected for the project will ensure compatibility and seamless integration of the platform's technical components.

Scalability: The IPark platform is assumed to be designed and developed with scalability in mind to accommodate potential future growth in user numbers and parking facility partners.

Availability of Parking Spaces: The availability of parking spaces displayed on the platform is assumed to be accurate to the best of the system's ability, but real-time changes in availability due to factors like sudden bookings or maintenance may occur.

User Adoption: Assumption is made that users will adopt the platform willingly, and strategies will be in place to promote user onboarding and engagement.

Business Promotion: It is assumed that local businesses will actively engage in promoting their services through the platform and offer incentives to users.

Regulatory Compliance: Assumption is made that the platform will comply with local parking regulations and that any required approvals from regulatory authorities will be obtained.

Data Analysis and Planning: Assumption is that data analysts and planners will use the data provided by the platform responsibly and in alignment with urban planning and regulatory requirements.

Financial Viability: It is assumed that the IPark platform will generate sufficient revenue to sustain its operations and provide a return on investment to financial stakeholders.

Community Support: Assumption is made that community representatives will support initiatives that reduce parking-related issues in their respective areas and collaborate constructively with the project.

7. Constraints

process constraints

1. *Development Methodology*
2. *Timeline: Project timelines and deadlines are critical constraints*
3. *Resource Availability: Constraints related to the availability of skilled developers, designers, testers*
4. *Budget: Financial constraints can limit the resources available for the project*
5. *Compliance and Regulations: Compliance with industry regulations and standards*

external constraints

1. *Data Sources: External data sources, such as real-time traffic data or parking availability information*

2. *Cultural and Social Factors: Cultural norms and social attitudes toward parking*
3. *Partnerships and Alliances: Collaborative partnerships with parking facility owners, transportation providers like parking owners*
4. *Third-Party Services: Dependencies on third-party services, such as mapping services for example Google Maps*
5. *Government Policies: Government policies and initiatives related to transportation.*

Dependencies

1. *Hardware and Software Dependencies: Dependencies on specific hardware components*
2. *Integration Dependencies: Integrating the platform with existing systems or external services may require coordination and compatibility checks*
3. *Testing Environments: Availability and configuration of testing environments*
4. *Market Research Dependencies: Market research and user feedback*