

# Software Project Management (SOEN 6841 – Fall 2024)

## Project initiation and market analysis

### Team 18

#### Problem Identification Report:

Urban areas face significant parking challenges, including congestion, inefficient space utilization, and wasted time searching for parking. Increased traffic, pollution in the environment, and driver annoyance are the results of these issues. By offering real-time parking space availability, directing cars to the closest place, and facilitating seamless payment, the "Smart Parking Solution" seeks to enhance parking management. This will improve user convenience while lowering emissions and traffic congestion.

#### Stakeholder Analysis:

Stakeholder	Interests	Concerns
City Administrators	<ul style="list-style-type: none"><li>• Improve urban traffic flow</li><li>• Reduce environmental impact (pollution, emissions)</li><li>• Efficient use of public infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Complexity and cost of implementing new technology</li><li>• Potential resistance from the public or parking operators</li><li>• Managing data privacy and security concerns</li></ul>
Drivers	<ul style="list-style-type: none"><li>• Quick and easy access to parking spaces</li><li>• Minimized time spent searching for parking</li><li>• Seamless navigation and payment options</li></ul>	<ul style="list-style-type: none"><li>• Accuracy of real-time parking availability data</li><li>• Potential increase in parking costs due to convenience fees</li><li>• Reliability of the system and mobile application functionality</li></ul>
Parking Lot Owners	<ul style="list-style-type: none"><li>• Maximize occupancy and revenue from parking spaces</li><li>• Efficient parking space management</li><li>• Integration with digital payment systems</li></ul>	<ul style="list-style-type: none"><li>• Initial investment in technology and sensors</li><li>• Data sharing and transparency with the platform</li><li>• User adoption and trust in the system</li></ul>

Local Businesses	<ul style="list-style-type: none"> <li>• Increased customer traffic due to accessible parking nearby</li> <li>• Improved customer satisfaction and retention</li> </ul>	<ul style="list-style-type: none"> <li>• Potential disruption during implementation</li> <li>• Cost of participation in the platform</li> </ul>
Environmental Advocates	<ul style="list-style-type: none"> <li>• Reduction in carbon emissions through efficient parking</li> <li>• Promotion of eco-friendly urban solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Effectiveness in reducing emissions in high-traffic areas</li> <li>• Potential limitations in scalability to smaller or less dense areas</li> </ul>

### Relevance to Software Solution:

After 16 months of work, the "Smart Parking Solution" project will be completed. This program will use real-time data analytics, GPS technology, and Internet of Things sensors to tackle the major issue of parking congestion and inefficiencies in metropolitan areas. By giving drivers access to real-time parking availability updates, the system will make it simple and quick for them to locate, reserve, and find available spaces. This lessens traffic congestion, cuts down on the amount of time spent looking for parking, and lowers car emissions.

The software product developed through this project will include features for:

- **Real-Time Parking Availability:** Integration of IoT sensors to detect and display available parking spots.
- **Parking Spot Reservations:** The ability to reserve parking spaces ahead of time.
- **Navigation:** GPS integration to guide drivers to their reserved or nearest available spot.
- **Seamless Payment Processing:** Multiple digital payment options to ensure a contactless parking experience.
- **Dynamic Pricing:** Support for pricing strategies based on demand, location, and time.

The system will support both private and public parking spots, giving parking lot managers and owners effective space management capabilities. Up to 50,000 drivers will be able to utilize the program; they will be able to do so by connecting to the internet and using a web portal or mobile app.

Parking lot owners will be able to analyze data, monitor real-time space use, and modify price through a dedicated management dashboard. Strong security measures will also be put in place to guarantee the security of user data, including payment information and location tracking.

# Market Analysis

## Target Audience Identification:

- **Primary Target Audience:**
  - **Drivers in Urban Areas:** Regular commuters, visitors, and tourists who struggle to find parking.
  - **Parking Lot Operators and City Administrators:** Those managing public and private parking spaces, interested in optimizing occupancy and efficiency.
- **Demographic Characteristics:**
  - **Age:** 25-55 years, primarily employed individuals who commute regularly.
  - **Income:** Middle-to high-income urban residents.
  - **Location:** High-density urban centers with limited parking space availability.
- **Psychographic Characteristics:**
  - **Tech-Savvy Users:** Comfortable using mobile apps and digital payment systems.
  - **Eco-Conscious Drivers:** Interested in reducing carbon footprints by minimizing time spent driving in circles for parking.

## Competitor Analysis:

JustPark, ParkMobile, and SpotHero are a few of the well-known competitors of the "Smart Parking Solution" in the parking management market. All of these rivals provide parking solutions; but their unique SWOT analyses—strengths, weaknesses, opportunities, and threats—can help guide the creation and marketing of the "Smart Parking Solution."

Competitor	Strengths	Weaknesses	Opportunities	Threats
<a href="#">ParkMobile</a>	<ul style="list-style-type: none"><li>• Extensive coverage across multiple cities and regions.</li><li>• Strong partnerships with parking operators and municipalities.</li><li>• Seamless payment integration through mobile apps.</li></ul>	<ul style="list-style-type: none"><li>• Limited real-time parking availability data.</li><li>• Focuses more on payment and less on real-time navigation to spots.</li><li>• User interface can be complex and unintuitive.</li></ul>	<ul style="list-style-type: none"><li>• Opportunity to integrate more real-time parking space availability and improve user experience.</li><li>• Can expand into underdeveloped markets or partner with additional private parking operators.</li></ul>	<ul style="list-style-type: none"><li>• Competition from other parking solutions offering more advanced features, such as dynamic pricing and space reservations.</li></ul>

<a href="#"><u>SpotHero</u></a>	<ul style="list-style-type: none"> <li>• Allows users to reserve parking spots in advance.</li> <li>• Strong focus on user convenience with a simple interface.</li> <li>• Good partnerships with private parking garages.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited focus on on-street parking options.</li> <li>• Real-time availability not as robust as other solutions.</li> <li>• Service availability restricted to larger cities.</li> </ul>	<ul style="list-style-type: none"> <li>• Can expand its reservation model to on-street parking.</li> <li>• Opportunity to improve real-time availability features and partner with municipalities.</li> </ul>	<ul style="list-style-type: none"> <li>• High competition from platforms offering integrated, real-time IoT-driven solutions that cover both public and private spaces.</li> </ul>
<a href="#"><u>JustPark</u></a>	<ul style="list-style-type: none"> <li>• Unique focus on offering private parking spots, such as those at homes and businesses.</li> <li>• Strong presence in the UK market.</li> <li>• Easy-to-use interface for both parking providers and drivers.</li> </ul>	<ul style="list-style-type: none"> <li>• Weak presence outside of the UK, limited international expansion.</li> <li>• Focus primarily on small, private parking spots, neglecting larger, public spaces.</li> <li>• Less competitive pricing compared to larger platforms.</li> </ul>	<ul style="list-style-type: none"> <li>• Can expand into more international markets and diversify its focus to include public parking spaces.</li> <li>• Strong potential to partner with smart city initiatives to expand its user base.</li> </ul>	<ul style="list-style-type: none"> <li>• Growing competition from parking apps with broader geographical coverage and comprehensive offerings that include both public and private parking.</li> </ul>

### Business values:

- **Unique Selling Points:**
  - **Real-Time Availability:** Accurate, real-time data on parking availability through IoT sensors.
  - **Seamless User Experience:** Integration of navigation, parking reservations, and payment in one platform.
  - **Sustainability Impact:** Reduction of traffic congestion and carbon emissions through efficient parking space utilization.

- **Value Proposition for Users:**
  - **Drivers:** Save time and reduce frustration by easily finding parking, reducing the time spent circling in search of spots.
  - **City Administrators:** Better traffic management and lower pollution levels due to reduced congestion.
  - **Parking Lot Owners:** Maximize occupancy and revenue by efficiently managing parking spaces with real-time data.