

# ClientAppSystem

## System Description

### Abstract

This document provides the System Description (SysD) for the ClientAppSystem which serves as the external interface for end users interacting with the ParkingLotPricingCloud. It enables access to real time pricing, booking, availability and payment initiation services within the Arrowhead local cloud.

## Contents

<b>1 Overview</b>	<b>3</b>
1.1 Significant Prior Art . . . . .	4
1.2 How This System Is Meant to Be Used . . . . .	4
1.3 System functionalities and properties . . . . .	4
1.4 Important Delimitations . . . . .	4
<b>2 Services</b>	<b>5</b>
2.1 Produced Services . . . . .	5
2.2 Consumed Services . . . . .	5
<b>3 Security</b>	<b>6</b>
<b>4 References</b>	<b>6</b>
<b>5 Revision History</b>	<b>7</b>
5.1 Amendments . . . . .	7

# 1 Overview

This document describes the ClientAppSystem which provides an interface for users to interact with the parking lot services. The system allows users to check availability, view prices, make bookings and initiate payment requests. This is shown in figure 1.

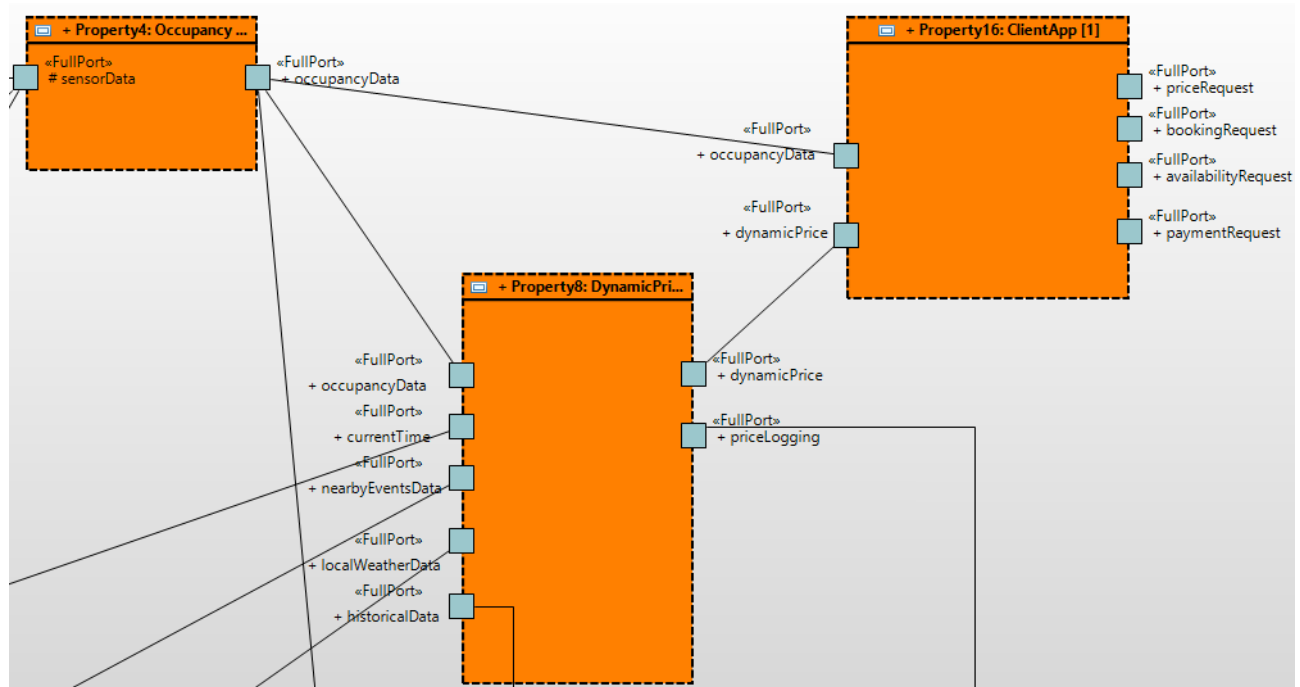


Figure 1: Use-case diagram showing the inputs and outputs of the client app.

The rest of this document is organized as follows. In Section 1.1 we reference major prior art capabilities of the system. In Section 1.2 we describe the intended usage of the system. In Section 1.3 we describe fundamental properties provided by the system. In Section 1.4 we describe delimitations of the system. In Section 2 we describe the abstract service functions consumed or produced by the system. In Section 3 we describe the security capabilities of the system.

## 1.1 Significant Prior Art

The ClientAppSystem follows standard design principles for distributed IoT applications and user-facing web clients. It is based on the service-oriented principles defined in the Arrowhead Framework which ensure modular and secure interactions between systems within a local cloud.

## 1.2 How This System Is Meant to Be Used

The ClientAppSystem is intended for deployment as the main user-facing entry point of the ParkingLotPricing-Cloud. It can be implemented as a mobile or web application connecting securely to the local cloud through HTTPS. End users use it to query current parking prices, check availability, book parking spaces and initiate payment requests.

## 1.3 System functionalities and properties

### 1.3.1 Functional properties of the system

The ClientAppSystem provides a graphical interface that allows users to interact with the services offered by the local cloud. It sends requests for pricing, booking and availability and forwards payment initiation messages to an external payment handler.

### 1.3.2 Configuration of system properties

The system is designed for flexibility and can be configured for different parking lots and user interfaces.

### 1.3.3 Data stored by the system

The ClientAppSystem stores minimal data locally. Long term data storage is handled by the History Database or external systems.

### 1.3.4 Non functional properties

- Security: Communication with the cloud is encrypted and authenticated through HTTPS and TLS.
- Usability: The interface is designed to be intuitive for users.
- Latency: Low response times are prioritized for user interactions.
- Scalability: The system can serve multiple users simultaneously without loss of performance.

### 1.3.5 Stateful or stateless

The ClientAppSystem operates mainly statelessly handling each user request independently. Session state is preserved temporarily during active sessions only.

## 1.4 Important Delimitations

The ClientAppSystem does not handle payment processing. It only initiates requests to external services and displays responses to the user.

## 2 Services

### 2.1 Produced Services

- PriceRequest service  
Exposes the user's request for current parking prices based on data provided by the DynamicPricingSystem.
- BookingRequest service  
Enables users to book parking spaces.
- AvailabilityRequest service  
Sends a query for the current number of free parking spaces.
- PaymentRequest service  
Initiates a payment transaction through an external payment system.

### 2.2 Consumed Services

- DynamicPricing service  
Consumed from the DynamicPricingSystem to display current parking prices.
- AggregatedOccupancy service  
Consumed from the OccupancySystem to provide real time availability information.



ARROWHEAD

Document title  
**ClientAppSystem**  
Date  
**2025-10-19**

Version  
**1.0.0**  
Status  
**RELEASE**  
Page  
**6 (7)**

### 3 Security

Security is provided by the Arrowhead framework and using HTTPS for communication.

### 4 References



ARROWHEAD

Document title  
**ClientAppSystem**  
Date  
**2025-10-19**

Version  
**1.0.0**  
Status  
**RELEASE**  
Page  
**7 (7)**

## 5 Revision History

### 5.1 Amendments

No.	Date	Version	Subject of Amendments	Author
1	2025-10-14	1.0.0	Initial release	Mattias Öhman