occupancyData

Service Description

Abstract
This Service Description (SD) defines the occupancyData service, produced by the OccupancySystem. The service aggregates boolean occupancy states from multiple parking sensors within a single parking lot and provides summarized occupancy information with associated metadata.

Contents

1 Overview

The occupancyData service collects boolean occupancy signals from multiple sensors, each tied to a specific parking spot within a single parking lot. The service aggregates these values to compute total and available spaces, along with metadata such as timestamp, parking spot type (e.g., regular or electric), and overall occupancy percentage.

It is typically consumed by the DynamicPricingSystem to inform real-time price calculations based on lot utilization.

The rest of this document is organized as follows. Section 2 describes the abstract message operations provided by the service. Section 3 presents the data types used in those operations.

1.1 How This Service Is Meant to Be Used

The service is intended for internal use within the local cloud. The OccupancySystem gathers boolean sensor values periodically, on change events or when needed and makes the aggregated occupancy information available to authorized consumers, such as the DynamicPricingSystem.

1.2 Important Delimitations and Dependencies

The service operates on a single parking lot and does not manage data across multiple sites. It depends on functional sensor connections and correct metadata assignment (spot type, ID, etc.). It does not do anything advanced like predictive or historical analysis, only real-time aggregation.

2 Service Interface

2.1 operation getOccupancyData (occupancyRequest) : occupancyResponse

The getOccupancyData operation returns the current aggregated occupancy for the parking lot. It takes a request with timestamp or spot type filter and returns counts of occupied and total spaces, occupancy ratio, and metadata.

3 Information Model

3.1 struct occupancyRequest

Defines the optional parameters for an occupancy data request.

Field	Type	Description
timestamp	DateTime	Optional timestamp filter for the data snapshot
spotType	Name	Optional filter by parking spot type (e.g., “EV”, “regular”)

3.2 struct occupancyResponse

Defines the response returned by the service.

Field	Type	Description
totalSpots	Integer	Total number of parking spots monitored
occupiedSpots	Integer	Number of currently occupied spots
occupancyRatio	Float	Ratio between occupied and total spots (0.0–1.0)
timestamp	DateTime	Time when data was aggregated
metadata	Metadata	Additional descriptive information (e.g., lot name, type)

3.3 Primitives

Type	Description
Name	String identifier for the parking spot or type
DateTime	Timestamp in UTC format
Integer	Whole number for counting parking spots
Float	Floating-point number for fractional values
Metadata	Object containing key–value descriptive data

4 References

5 Revision History

5.1 Amendments

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