Parklio

SYSTEM OVERVIEW

Trademarks

Parklio™ is a trademark of Parklio d.o.o.

Other brand and product names are registered trademarks or trademarks of their respective holders.

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Parklio™ reserves the right to make changes to the products described in this document without notice. Parklio™ does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

TABLE OF CONTENTS

1. Purpose of the document

The purpose of this document is to give a detailed description of the Parklio system. It will explain the purpose and features, functionalities and the constraints under which it must operate. This document is intended for all the existing and new customers of the Parklio system.

2. Glossary

PARKLIO CONNECT	Smartphone application used for control, configuration and management of Parklio products
PARKLIO PRODUCT	Device for physical protection of unauthorized parking, manufactured by Parklio. This includes: • Parklio Barrier • Parklio Gate • Parklio Chain • Parklio Bollard
PARKLIO SOLUTION	Solution for parking management developed by Parklio. This includes: • Parklio LPR • Parklio Brain • Parklio API • Parklio Gateway • Parklio Terminal
PARKLIO BARRIER	Parklio Parking Barrier is a smartphone-controlled parking barrier that protects the parking space from unauthorized usage while providing reliable control and efficient parking management
PARKLIO GATE	Parklio gate is an automatic barrier controlled via smartphone and it is used for guarding parking facilities, entrances to restricted areas, manufacturer floors, checkpoints or any other kind of exit/entry point, controlling traffic in both directions

PARKLIO CHAIN	Parklio Chain is an automatic chain barrier controlled via smartphone. It is an ideal solution for the protection of wider entrances and areas. It can cover access points up to 20 meters wide.
PARKLIO BOLLARD	Parklio Bollard is a hydraulic security bollard designed to withstand high car flows thus economically and efficiently securing parking lot entry or exit in just a few seconds.
PARKLIO LICENSE PLATE RECOGNITION (LPR) CAMERA	Parklio LPR camera enables automatic detection of vehicle licenses and ensures automatic access for authorized users.
PARKLIO BRAIN	Parklio Brain is a universal electronic module used to augment the functionality of existing parking products, allowing the Parklio system to interface with them. Parklio Brain turns existing parking products into smart parking products which becomes part of the Parklio system.
PARKLIO GATEWAY	Placed in the middle of the Parklio universe, Parklio Gateway enables remote control of the Parklio™ products. It serves as an intermediary between the Parklio products and the end-user. Besides coordinating and managing all the data communication between the products, Parklio Gateway provides real-time parking occupancy information.
EXISTING PRODUCT	3rd party parking protection device
PARKLIO SERVER	Parklio API is the central part of the entire system and is used for coordinating and managing all Parklio operations and integrations.
PARKLIO PARKING MANAGEMENT SYSTEM (PMS)	PMS enables reliable control and simple management of Parklio smart parking products through a user-friendly interface. Parklio PMS provides real-time information about product state, product position, parking lot occupation and many more.

THIRD PARTY SERVER	Third-party API that can be integrated with Parklio API in order to use Parklio services
THIRD PARTY SYSTEM	A system used by a third party for parking management
DIGITAL KEY	Digital (electronic) key created and provided by Parklio system allowing the digital key recipient control of the product for which he has the key.
BLUETOOTH LOW ENERGY (BLE)	A wireless personal area network with very low energy consumption
REMOTE CONTROL	Control of the Parklio products and Existing products via Internet
END USER	A user of Parklio Connect application or a user of system with integrated Parklio product or Parklio solution
PARKLIO ENTERPRISE	Smartphone application used for reservation and control of Parklio products

In order to configure Parklio products and share digital keys an Internet connection is required. Internet connection is not required to control the Parklio products.

LEGEND

Wired connection

Bluetooth connection

Internet connection

Visual communication

3. Use cases

USE CASE 1.1:

ID: 1
NAME: Controlling Parklio products with Parklio connect
PROTECTION DEVICE: Parklio products
SOLUTION: Parklio Connect
DESCRIPTION: Using Parklio connect the end user can control all Parklio products for which he has a valid digital key. Communication with products is achieved via Bluetooth Low Energy (BLE).

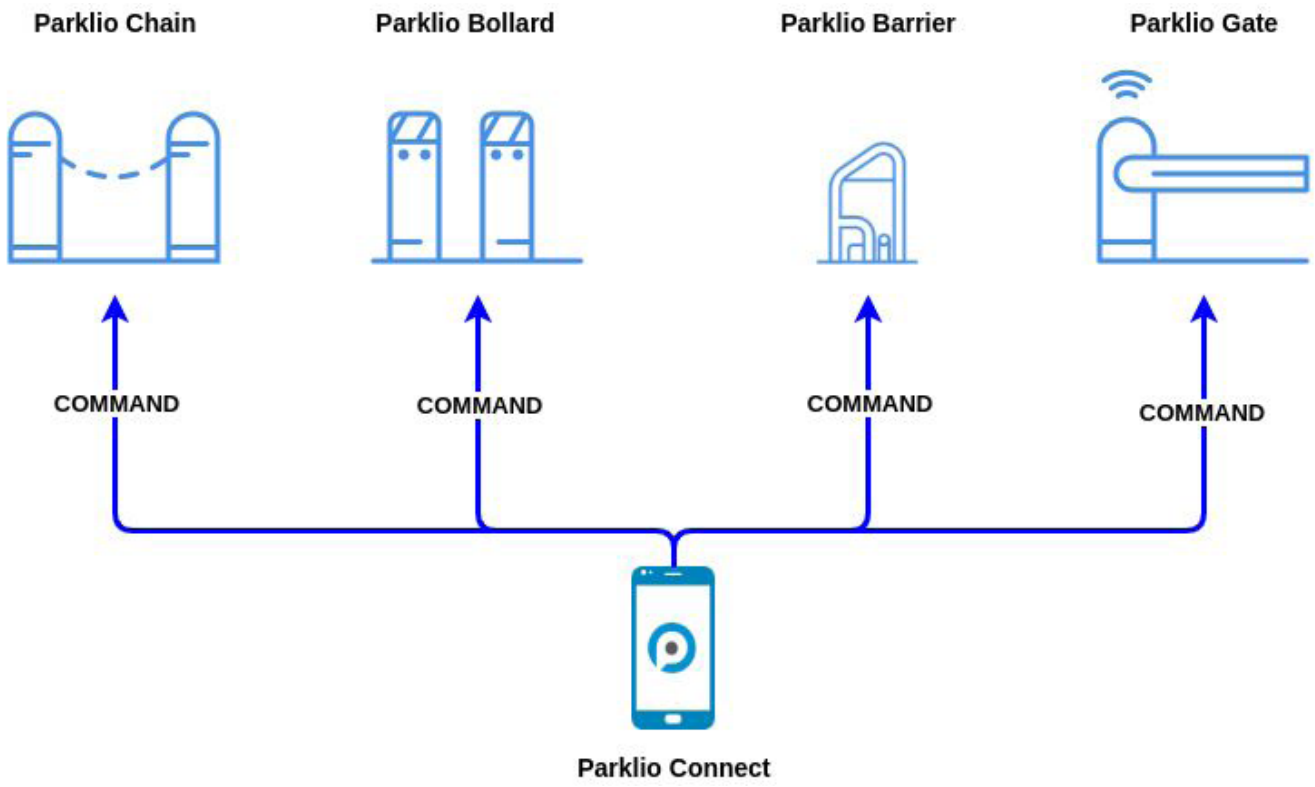

Figure 1.1 - Parklio Connect

USE CASE 1.2:

ID: 2
NAME: Controlling an existing product with the *Parklio connect*
PROTECTION DEVICE: Existing product
SOLUTION: *Parklio Connect, Parklio Brain*
DESCRIPTION: Using Parklio connect, the end user can control ***an existing product*** with an integrated ***Parklio Brain*** for which he has a valid ***digital key.*** Communication with the existing product with an integrated ***Parklio Brain*** is achieved via ***BLE***.

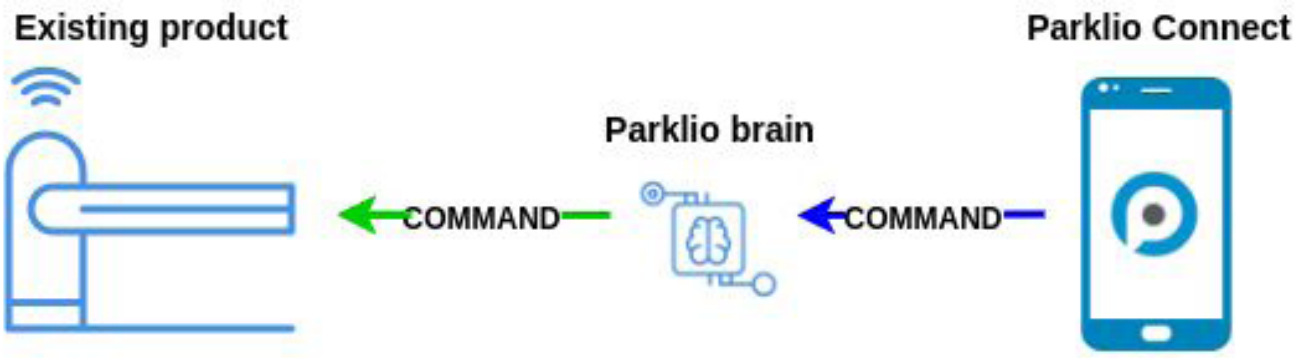

Figure 1.2 - Parklio Connect with the existing product

USE CASE 2.1:

ID: 3
NAME: *Parklio PMS with Parklio LPR camera and Parklio product*
PROTECTION DEVICE: *Parklio Gate, Parklio Chain, Parklio Bollard*
SOLUTION: *Parklio PMS, Parklio LPR camera*
DESCRIPTION: Upon the vehicle arrival, the vehicle's licence plate is read by the ***Parklio LPR*** camera and sent to the ***Parklio server*** for authorization. Through the ***Parklio PMS*** the lot owner can add or remove access permission for any licence plate. If a certain license plate is authorized, the **Parklio Server** will give a command to open the ***protection device.***

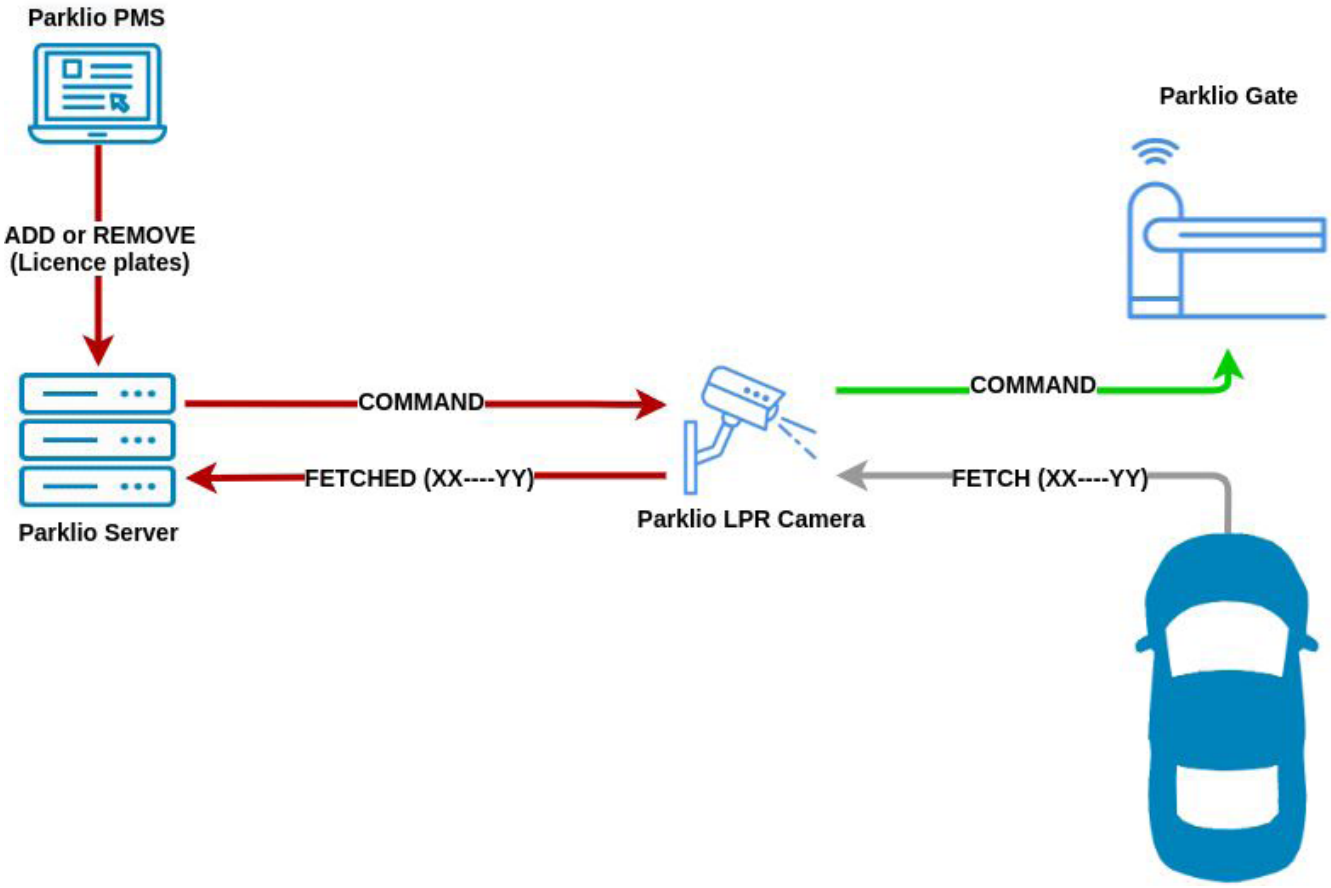

Figure 2.1 - Parklio PMS with the Parklio LPR and Parklio product

USE CASE 2.2:

ID: 4
NAME: *Parklio PMS* with *Parklio LPR camera* and *existing product*
PROTECTION DEVICE: *Existing product*
SOLUTION: *Parklio PMS, Parklio LPR* camera
DESCRIPTION: Upon the vehicle arrival, the vehicle's licence plate is read by the ***Parklio LPR*** camera and sent to the ***Parklio server*** for authorization. Through the ***Parklio PMS*** the lot owner can add or remove access permission for any licence plate. If a certain license plate is authorized, the ***Parklio Server*** will give a command to open the ***Existing Product.***

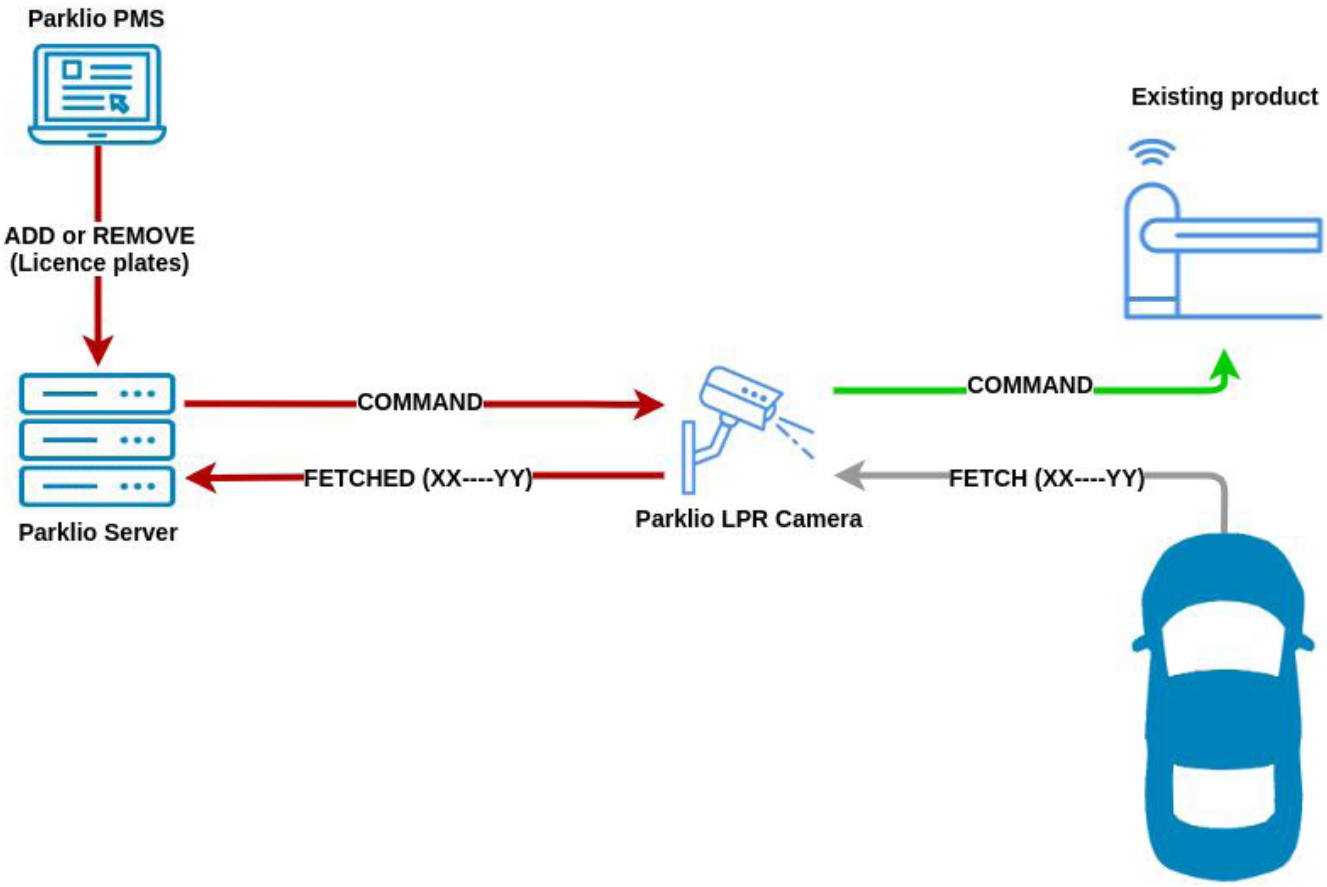

Figure 2.2 - Parklio PMS with the Parklio LPR and existing product

USE CASE 2.3:

ID: 5
NAME: *Third party system* with *Parklio LPR* and *Parklio product*
PROTECTION DEVICE: *Parklio Gate, Parklio Bollard, Parklio Chain*
SOLUTION: *Parklio LPR camera*
DESCRIPTION: Upon the vehicle arrival, the vehicle's licence plate is read by the ***Parklio LPR*** camera and sent to the ***Parklio server,*** which emits data to ***the third party system***. Communication to ***the Parklio Server*** is achieved via ***Parklio API.*** The ***third party system*** should authorise the received data and issue a response to ***the Parklio server***. If the issued response is valid, ***the Parklio Server*** will give a command to open ***the protection device.***

Real time data about ***Parklio products*** can be obtained using the ***Parklio API.***

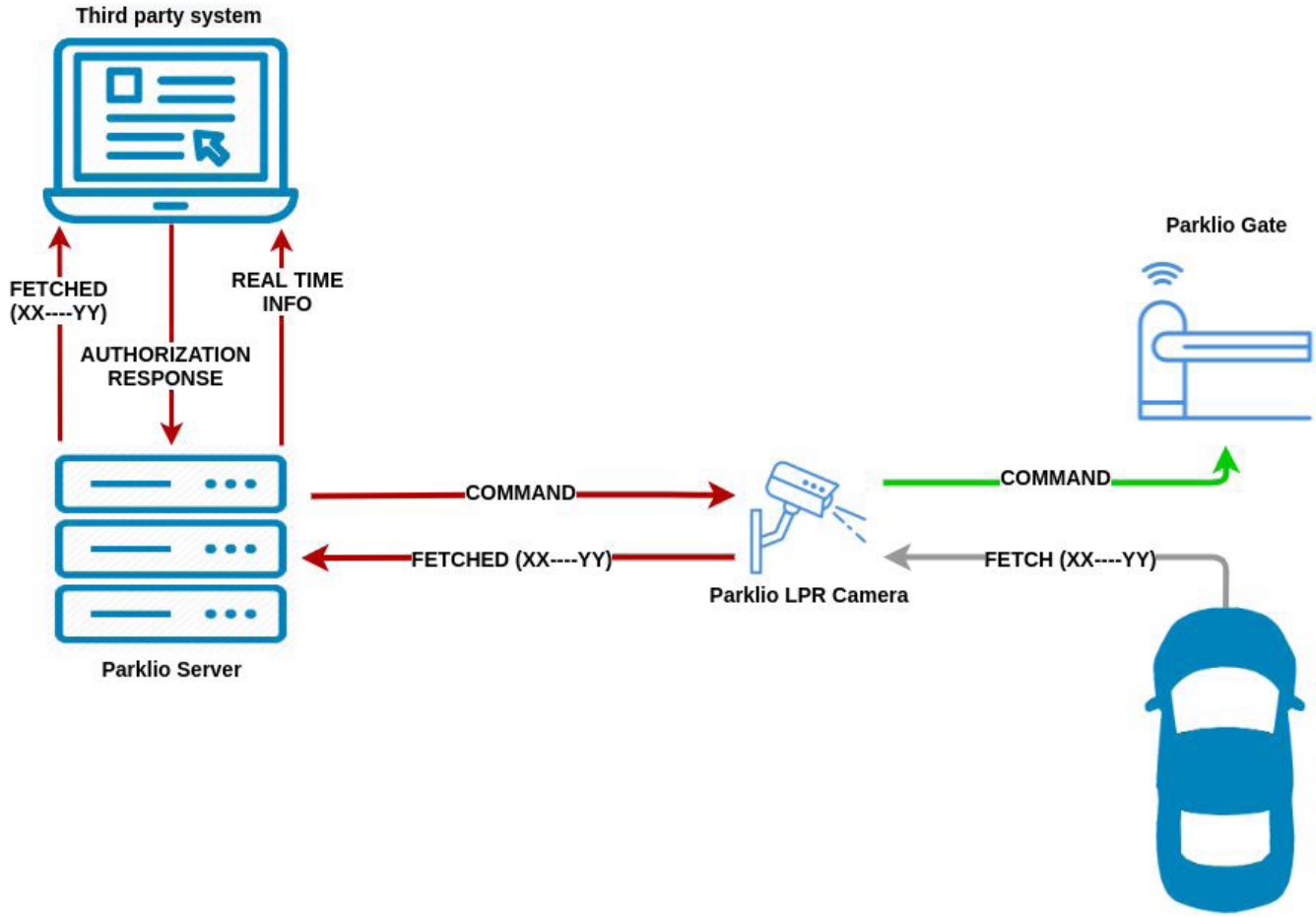

Figure 2.3 - Third party system with the Parklio LPR and Parklio product

USE CASE 2.4:

ID: 6
NAME: *Third party system* with *Parklio LPR* and *existing product*
PROTECTION DEVICE: *Existing product*
SOLUTION: *Parklio LPR* camera
DESCRIPTION: Upon the vehicle arrival, the vehicle's licence plate is read by the ***Parklio LPR*** camera and sent to ***the Parklio server***, which relays data to ***the third party system***. Communication to the Parklio Server is achieved via ***Parklio API***. The ***third party system*** should authorise the received data and issue a response to ***the Parklio server***. If the issued response is valid, ***the Parklio Server*** will give a command to open the ***Existing Product***.

Real time data about ***Parklio products*** can be obtained using the ***Parklio API.***

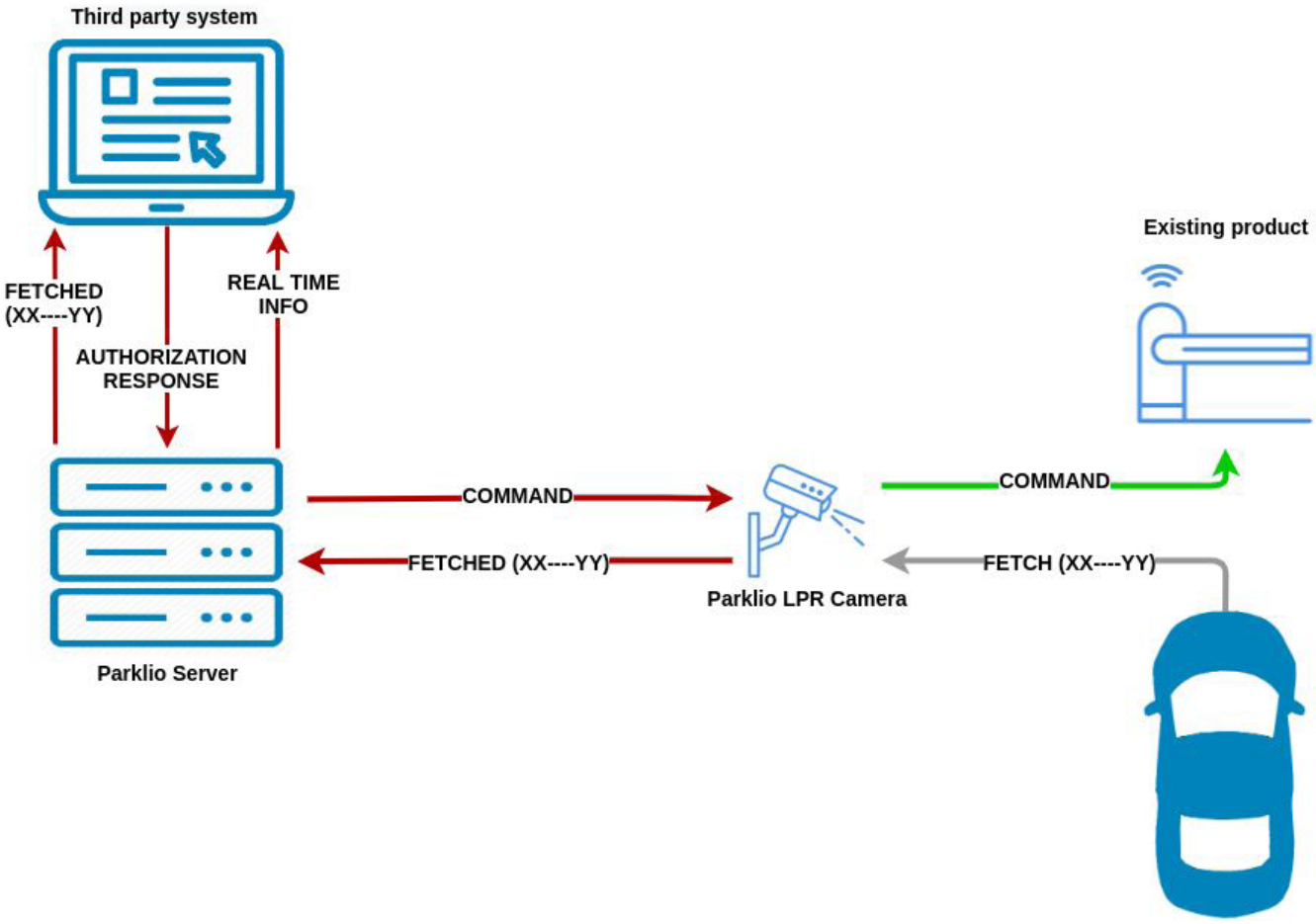

Figure 2.4 - Third party system with the Parklio LPR and existing product

USE CASE 3.1:

ID: 9
NAME: *Parklio Product remote control* via *Parklio Gateway*
PROTECTION DEVICE: *Parklio Products*
SOLUTION: *Parklio PMS, Parklio gateway*
DESCRIPTION: Using ***the Parklio gateway*** the user can remotely control ***Parklio products*** via the ***Parklio PMS***. ***The Parklio gateway*** forwards data and syncs ***Parklio product*** status with the ***Parklio server. Parklio Gateway*** constantly monitors the status of ***the Parklio product*** and relays information to ***the Parklio Server,*** which provides the user with real time information about certain products.

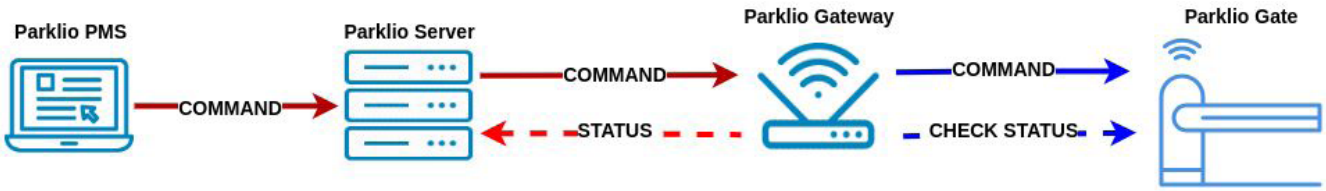

Figure 3.1.1 - Parklio product remote via Parklio Gateway

One Parklio gateway can control a maximum of 20 Parklio products given they are in control range of the Parklio Gateway and assigned to the same lot. If there are multiple Parklio Gateways installed on a single parking lot, based on the proximity and signal strength, the Parklio Server will compute which specific Parklio gateway will communicate with nearby Parklio products. This approach enables a large coverage area with optimum performance.

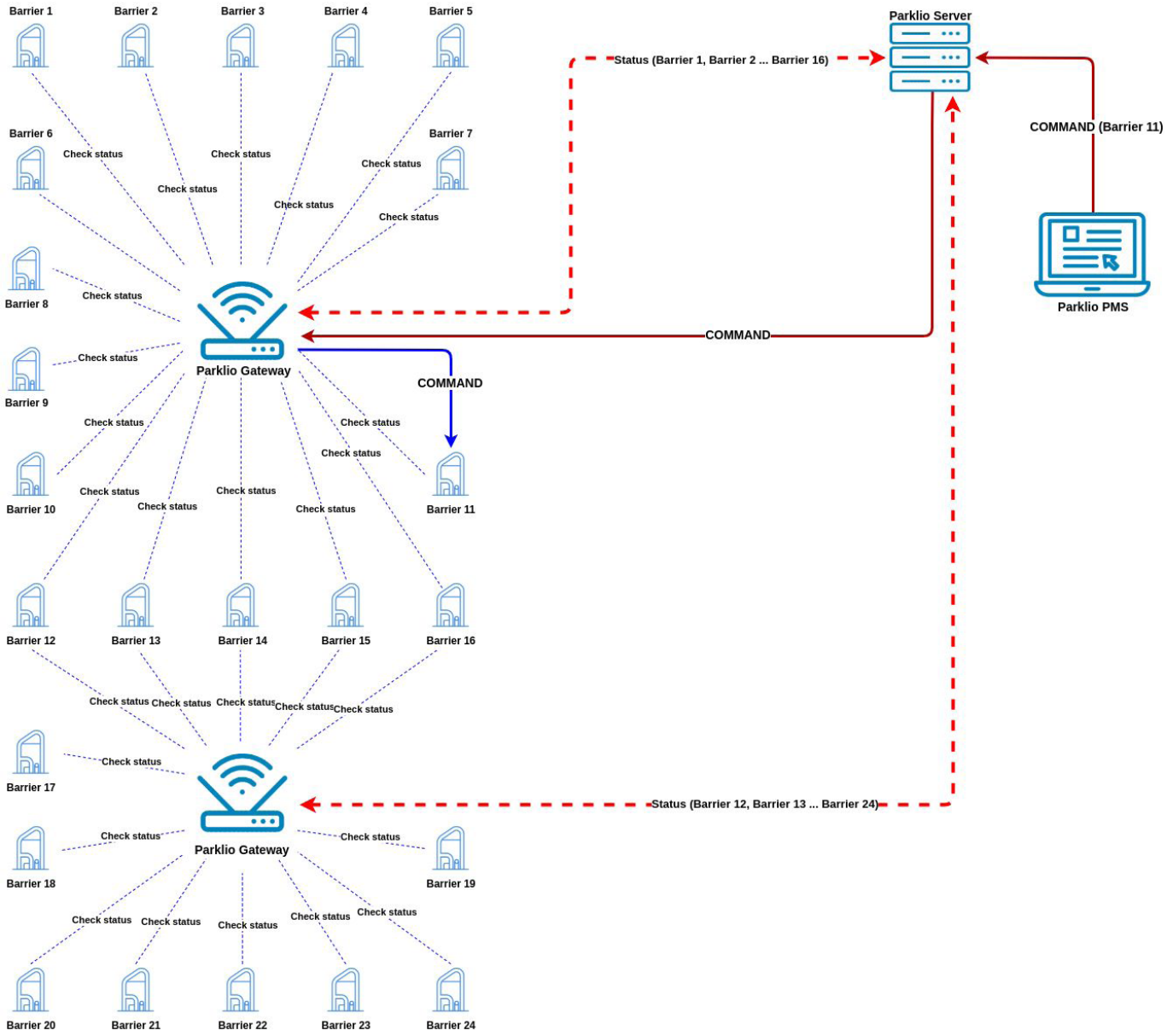

Figure 3.1.2 - Parklio products controlled by Parklio Gateways

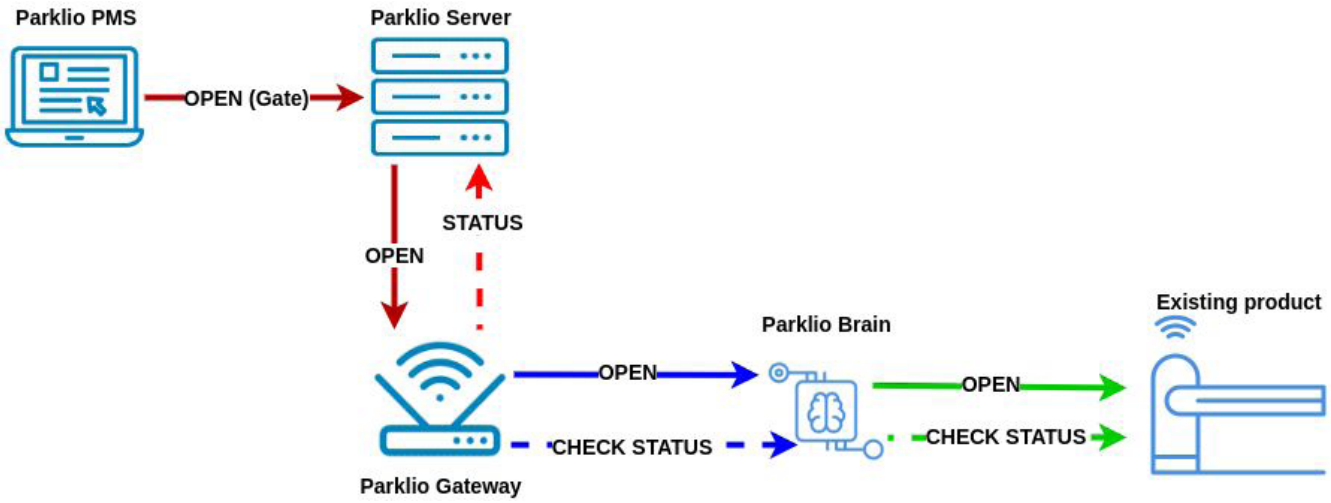

Figure 3.1.3 - Existing product remote via Parklio Gateway

USE CASE 3.2:

ID: 11
NAME: *Parklio product* remote control via *Parklio Gateway* and *third party system*
PROTECTION DEVICE: *Parklio Products*
SOLUTION: *Parklio Gateway, Parklio Brain*
DESCRIPTION: Using ***the Parklio gateway*** the user can remotely control ***Parklio products*** from a 3rd party system. ***The Parklio gateway*** forwards data and syncs ***Parklio product*** status with ***the Parklio server.*** Communication between ***the Parklio Server*** and a 3rd party system is achieved via ***Parklio API. The Parklio gateway*** forwards data and syncs ***Parklio product*** status with ***the Parklio server*** thus enabling remote control of Parklio products via 3rd party systems.

Parklio Gateway constantly monitors the status of ***the Parklio product*** and relays information to ***the Parklio Server***, which provides the user with real time information about certain products which is accessible via Parklio API.

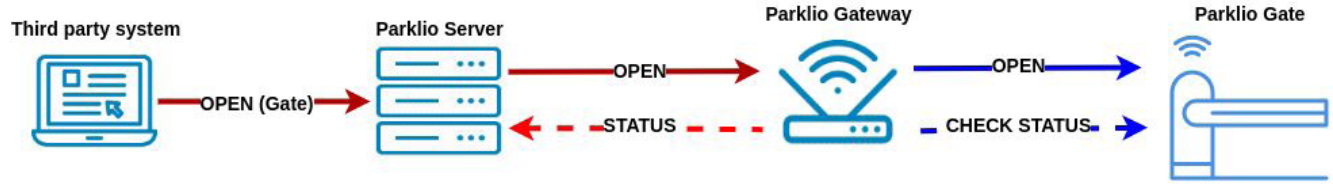

Figure 3.2 - Parklio product remote control via the Third party system

USE CASE 3.3:

ID: 12
NAME: *Existing product* remote control via *Parklio Gateway* and *third party system*
PROTECTION DEVICE: *Existing product*
SOLUTION: *Parklio Gateway*
DESCRIPTION: Using ***the Parklio gateway*** the user can remotely control ***Existing product*** with an integrated Parklio Brain from a 3rd party system. ***The Parklio gateway*** forwards data and syncs Existing product status with the ***Parklio server*** . Communication between ***the Parklio Server*** and a 3rd party system is achieved via ***Parklio API. The Parklio gateway*** forwards data and syncs ***Existing product*** status with ***the Parklio server*** thus enabling remote control of Parklio products via 3rd party system.

Parklio Gateway constantly monitors the status of ***the Existing product*** and relays information to ***the Parklio Server***, which provides the user with real time information about certain products which is accessible via Parklio ***API***.

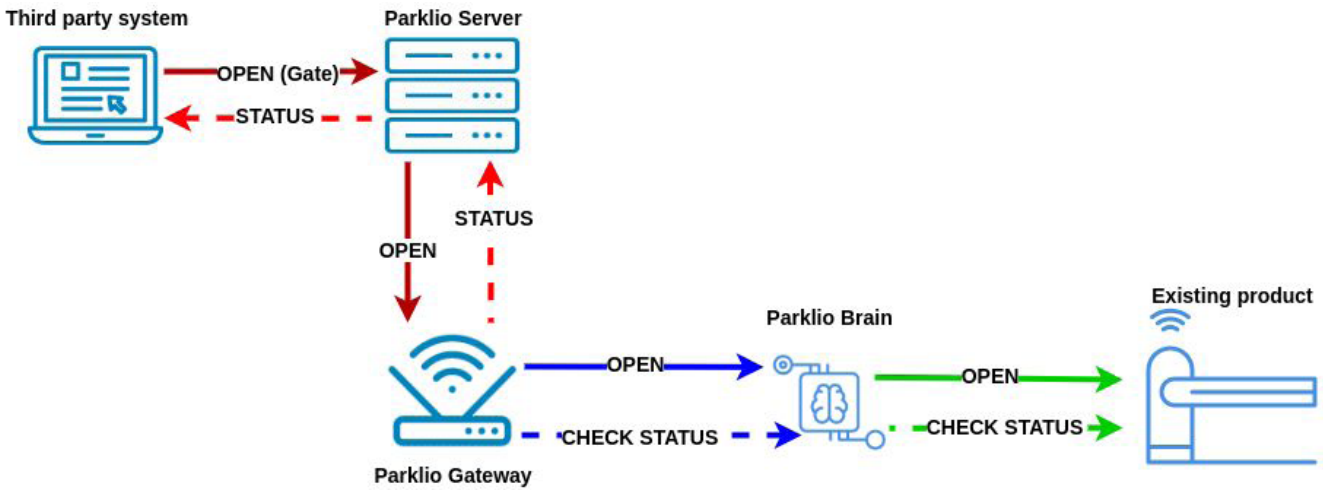

Figure 3.3 - Parklio product remote control via the Third party system