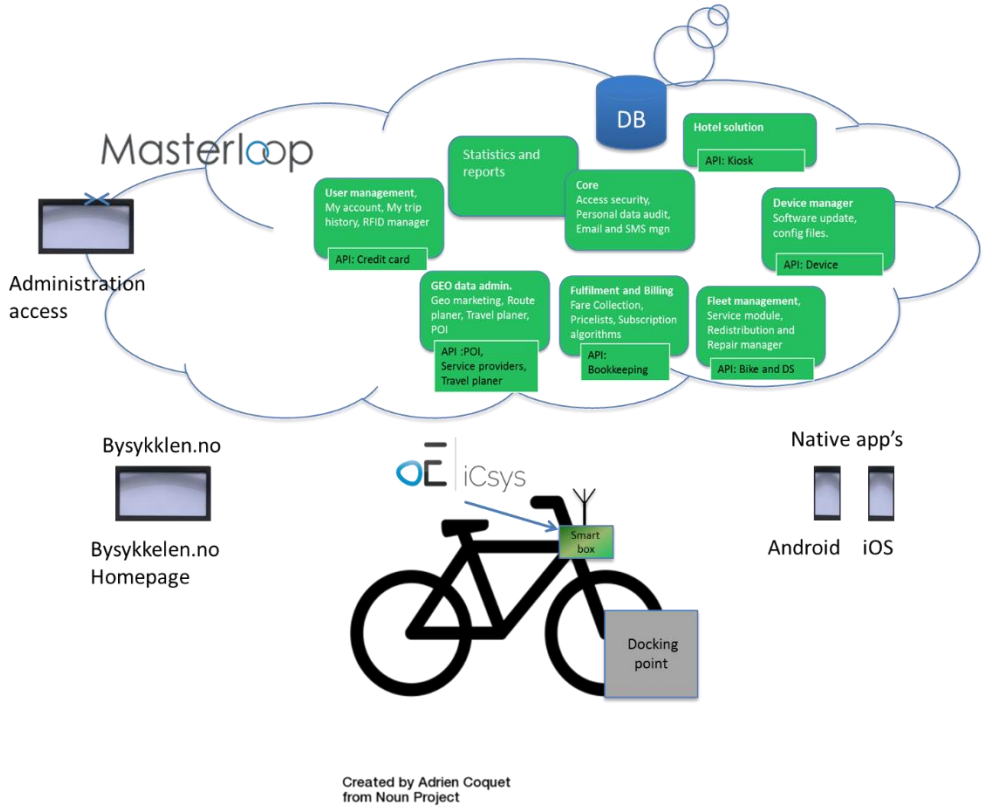


Bilag 1 Vedlegg A3: Beskrivelse av IT-Løsning

System description IT solution

Table of Contents

1. Background

This appendix provides an overview over the IT solution of the new "eBike share" system.

The IT solution is being built based on a comprehensive requirement specification. The specification is elaborated based on several years' experience with operation of eBike share solutions in Copenhagen and Stavanger.

1.1. Purpose

This document is elaborated for the bicycle tender process. The document provides an overview for the entire eBike share IT system.

The winner of the tender may enter into license agreement may be entered into and get full access to the requirement specification and all relevant documentation related to the development process.

1.2. Readers guide

This description outlines the system overview in section 2, below. Section 3 contains general description BikePCB features and Section 4 -5 outline functions of the central system and the back office access. Finally, section 6 contains a feature list for the native apps.

1.3. Definitions

Please refer to: Bilag 1 Vedlegg A1

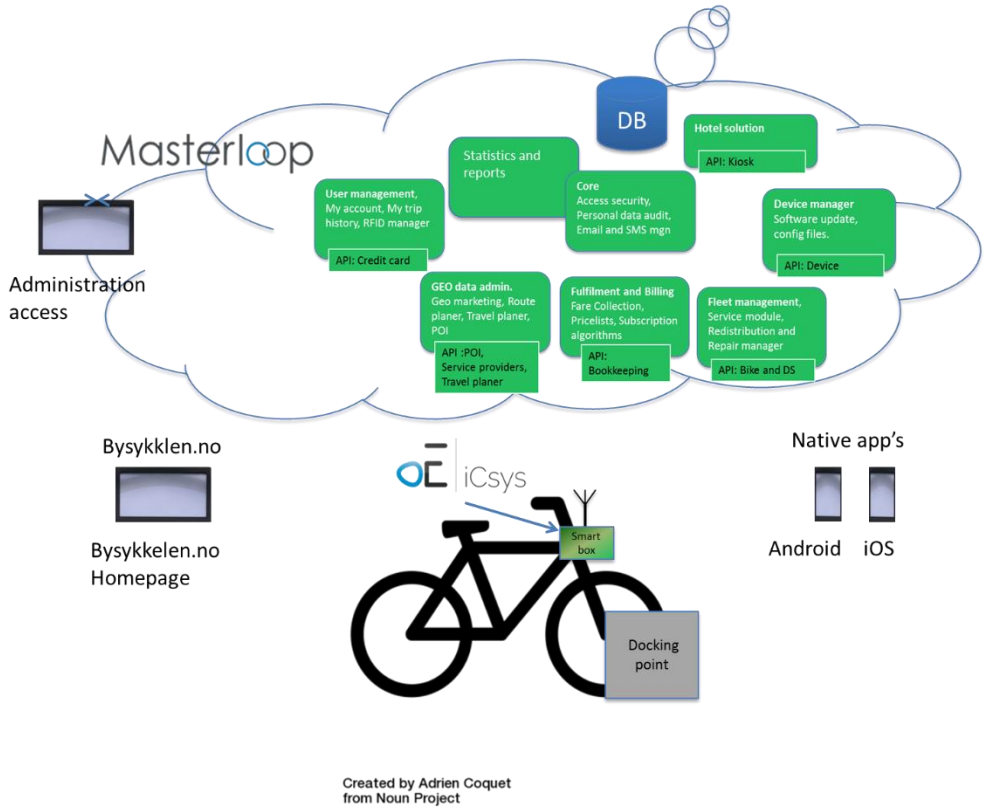
1.4. Project wiki

The project has established a project wiki (Media wiki) it is expected that all expert user help and back office help pages is implemented using this wiki.

2. System overview

The IT system has been specified by Virtual Team AS, Copenhagen. The specification is based on experiences with first generation eBike share systems and is to be seen as a second generation system. The new hardware elements are developed by iCsys AS, Stavanger and the core central system is developed by Masterloop AS, Stavanger based on the core IOT system developed by Masterloop AS.

The system is expected to be fully operational in August 2018.



Bysykkelen.no will be a commercial homepage only – bike share functions will be available on the native app's only.

In the following the individual elements: BikePCB, Central system (IOT system), Back office access web and Native apps will be described.

The Bysykkelen home page is a commercial web page only. It is not foreseen that the end-user will use the web page to get access to the system, the systems user apps will be the main access to the end-user orientated functions.

3. BikePCB

A new bikePCB has been designed. The bikePCB will have all functionalities required for eBike Share operation such as: GPS, GSM G4, Bluetooth, and interface to the eBike controller, lock and docking point. Furthermore, auxillary communications ports (CAN bus and USB) are included to future extension. The first working concept prototype has been developed and tested. The first working prototype of the BikePCB is expected end of Marts 2018.

3.1. Interface to the eBike controller and Battery

Interface using low impedance UART has been developed and tested. However, the BikePCB also supports CAN Bus interface and USB interface and may therefore be able to interface to almost any newer eBike Controller on the marked.

3.2. Interface to Docking point

Communication to the docking points is ensured via a piggy back solution. The BikePCB is in charge to ensure proper docking and undocking of the bike. This undocking is executed by the Docking point after proper authentication has been executed.

3.3. Interface to Back office

The BikePCB is also in charge of all communication with the back office solution.

Management of all eBike share actions such as: Lock- and Unlock Bike, dock- and undock bike etc. is managed and controlled by the central system but executed by the BikePCB.

4. Central system

The central system coordinates all eBike Share functions and provides interface to among others:

- All bikes,
- User apps and third party aps and third party web solutions
- Back office access
- Traffic information systems, route planer and maps.

4.1. Example of central functionality

- User administration. User access is controlled by the central system, both for end-users and administration staff.
- User subscription, invoicing and payment management.

- Charging level monitoring
- Asset management, Bike track monitoring and history
- Asset management, Docking points and Stations
- Maintenance and repair Module.
- Reports and accounting

5. Back office access

The access to the central system for service, maintenance and administrative staff is enabled through a web site interface.

6. Native aps

The native apps contain functionality to:

- Login and to create new user
- Subscription management
- Book, find and release bike
- Show trip and payment history

7. Document information

Version	Date	Issued by	Status	Purpose of update
1.0	13. Mar 18	PSA	Final	Initial document
2.0	14. Mar 18	PSA	Final	Proof reading
3.0	23. Mar 18	EF	Final	Proof reading