



Self checkout system



deti

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# Our team

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# Our Goals

## Self Checkout RFID System



### Self checkout

Self checkout RFID system



### Easy

Easiest for customer



### Fast

Faster than barcode systems



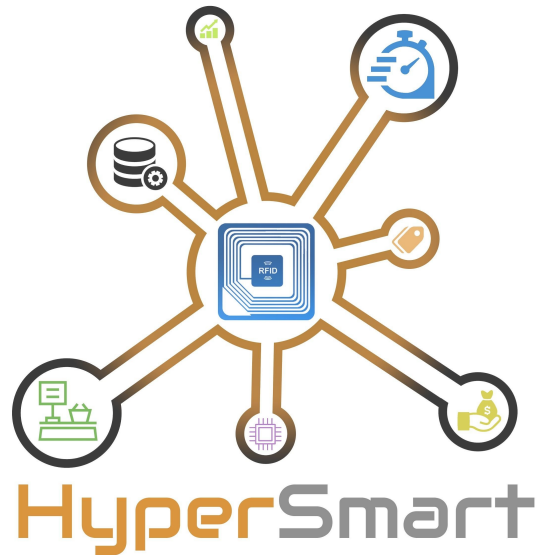
### Cheaper

Less workforce

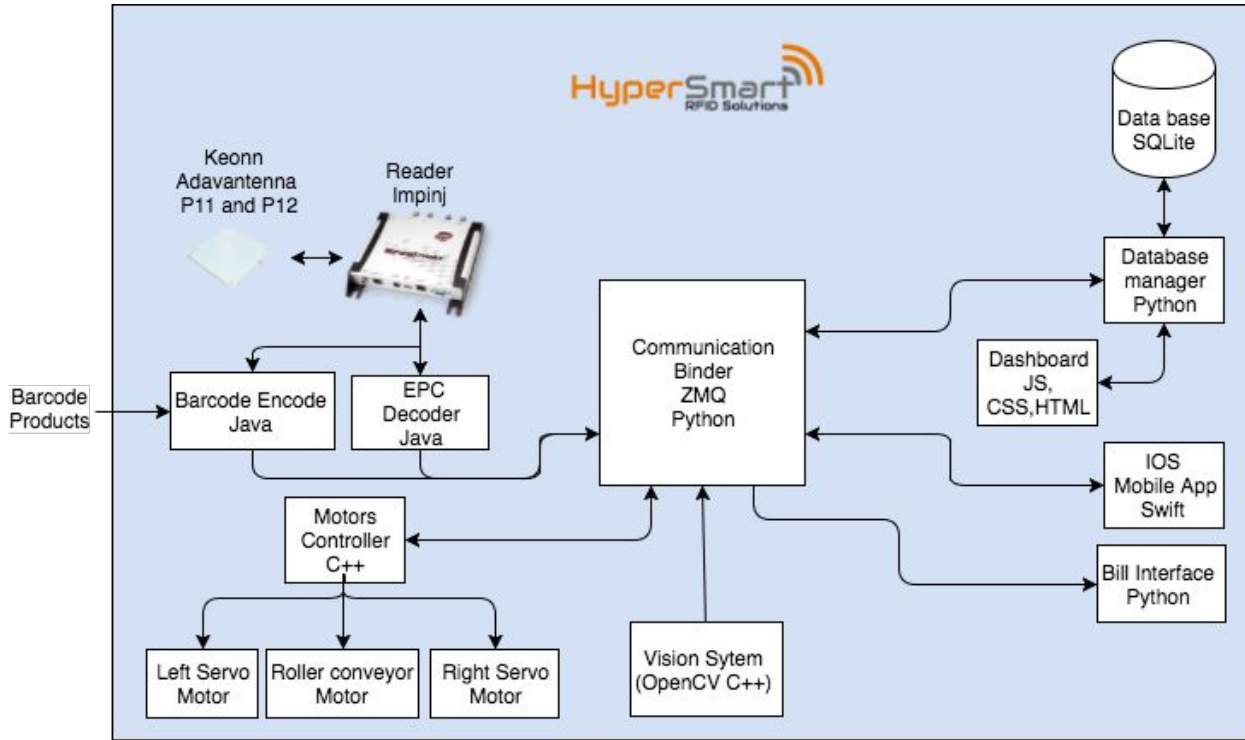


### Modular structure

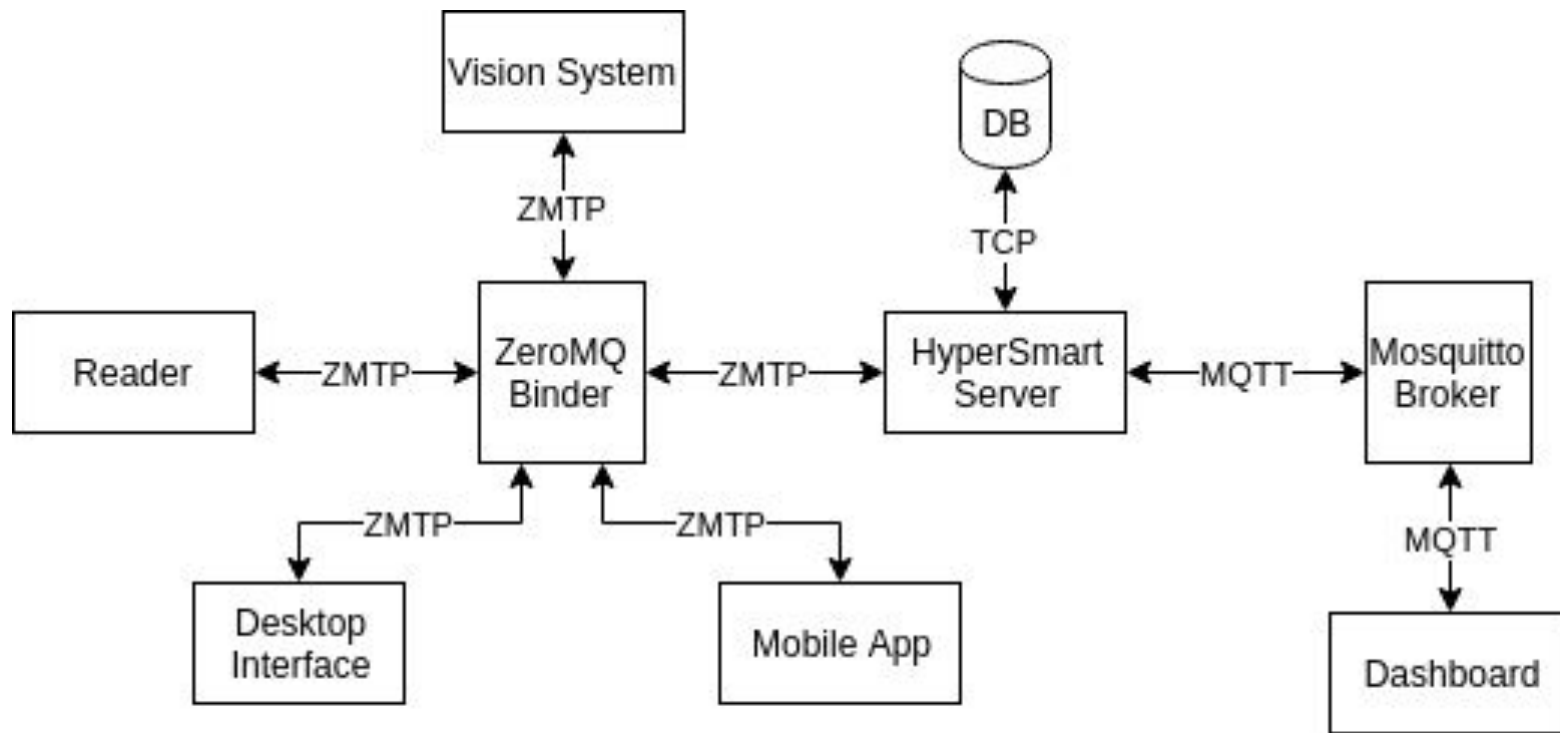
Adaptable to existent systems



# Architecture and Technologies



# Components and Protocols



# Features



Mobile  
payments



Adaptive  
structure

Bulk Encode  
&  
Decode



Dashboard



# Structure

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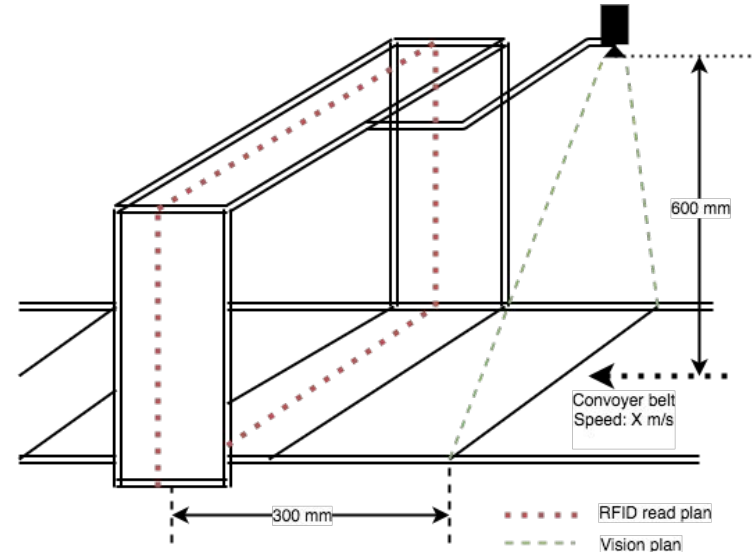
Dimensions: 55 cm x 40 cm x 20 cm



One servo motor per dynamic antenna



Image sensor to vision module



# Reading Features



**Keonn**  
**Advantenna P12**  
Static antenna

Range

Up to 3m

Gain

5.3 dBi

Beam width

60° / 90°

Weight

230 gr

Polarization

Circular



**Impinj speedway**  
**R420**  
Reader

Power

+10.0 to +32.5 dBm

Read rate

Up 1100 tags/sec

Frequency

UHF 868 MHz



**Keonn**  
**Advantenna P11**  
Dynamic antennas

Range

Up to 3m

Gain

3.2 dBi

Beam width

100° / 100°

Weight

115 gr

Polarization

Circular



# Encode & Decode



GTIN-14 barcode format



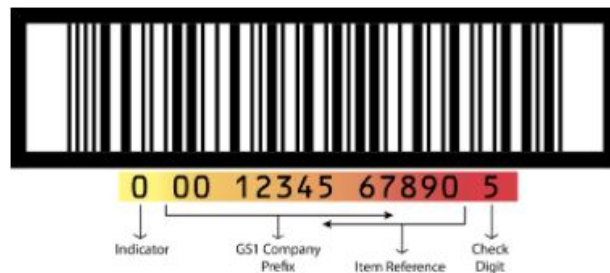
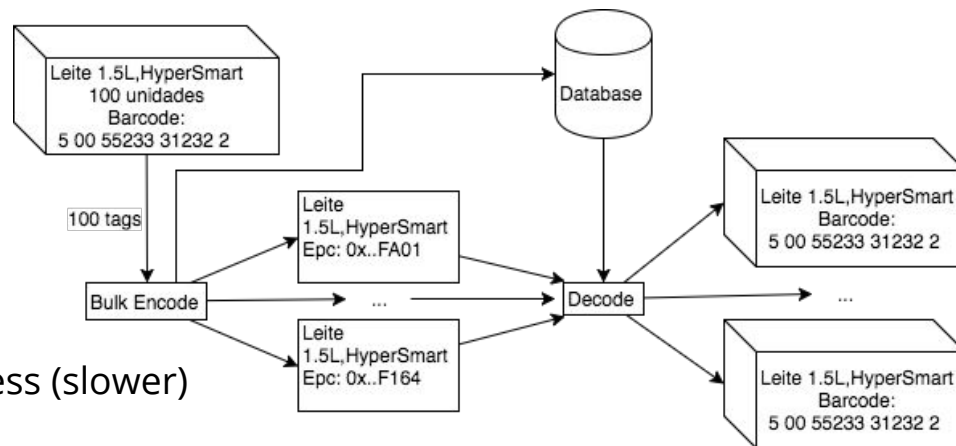
SGTIN-96 epc format



Bulk encode in stock process (slower)

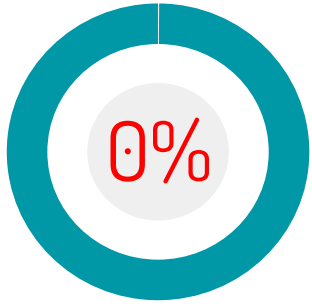


Decode in checkout process (fast)

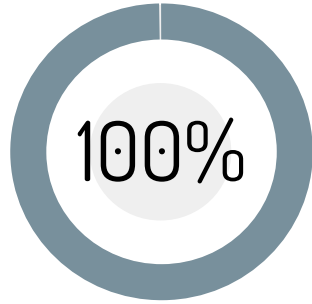


# Performance

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**Metal**



**Metal**

(with isolate material)



**Glass**



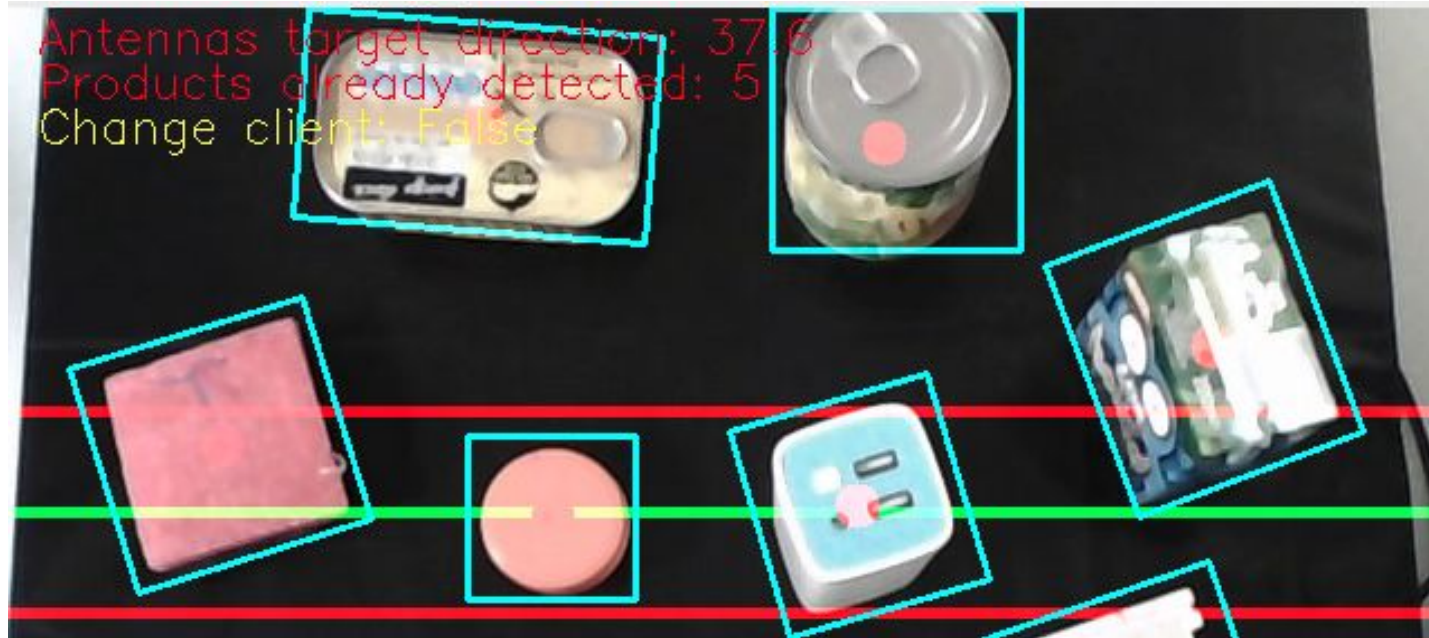
**Liquid**



**Others**

# Vision system

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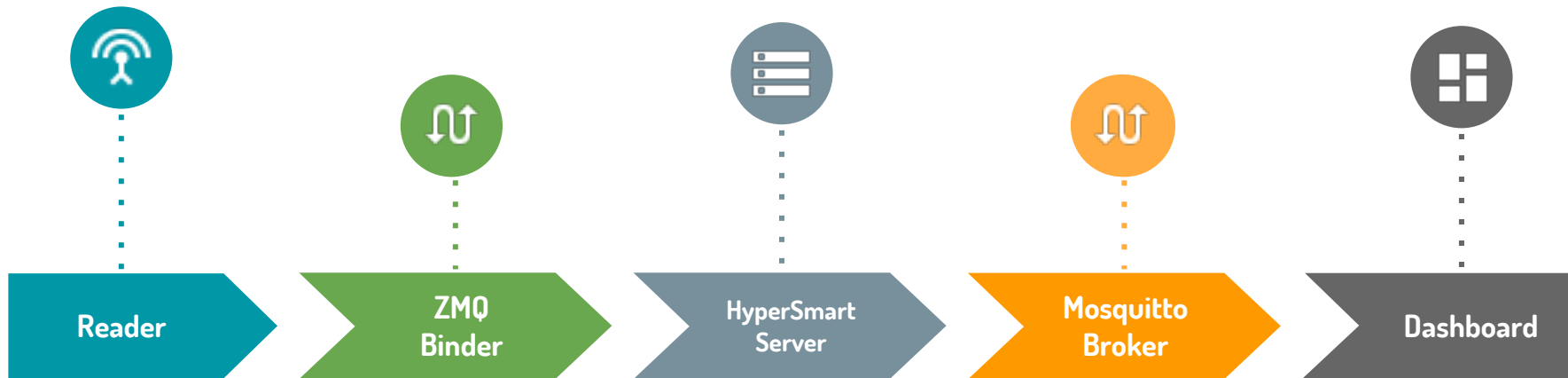


# Encode Process

## Workflow

### Process Goal

- Insert a set of products on HyperSmart System
- Provide visual feedback of the subjacent operations

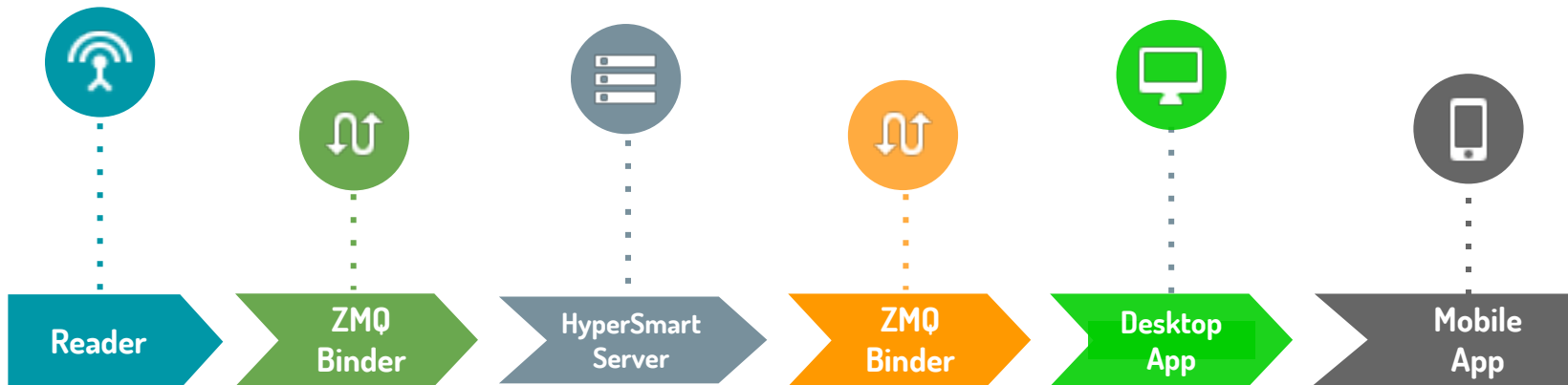


# Billing Process

## Workflow

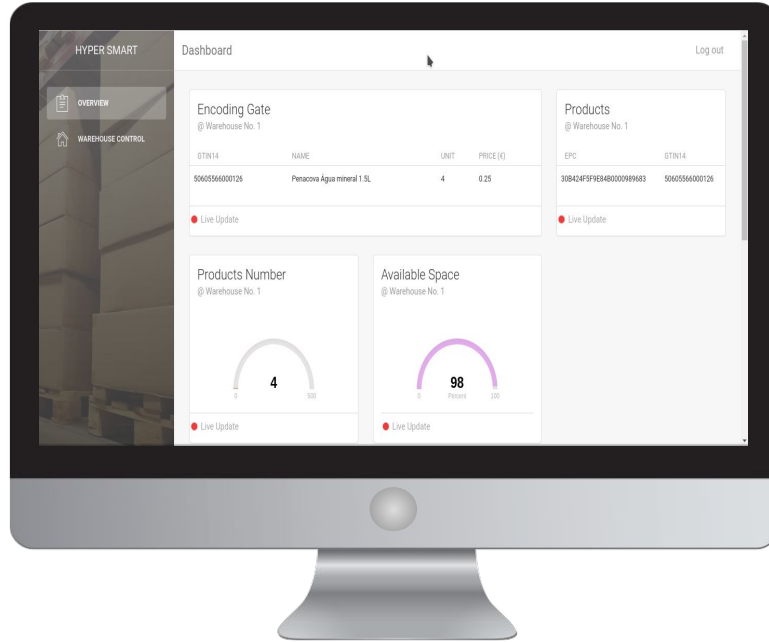
### Process Goal

- Process billing for a set of products
- Provide an user interface for billing details
- Provide mobile payment



# Warehouse Dashboard

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Monitoring and  
Encode Control



Warehouses Statistics



Real Time Update

# Desktop Application



QR code Technology



Detailed Bill



User Friendly

# IOS Application



## QR code technology

Easy to connect, by scanning the QR present on the desktop app.



## User Friendly

Easy to use.



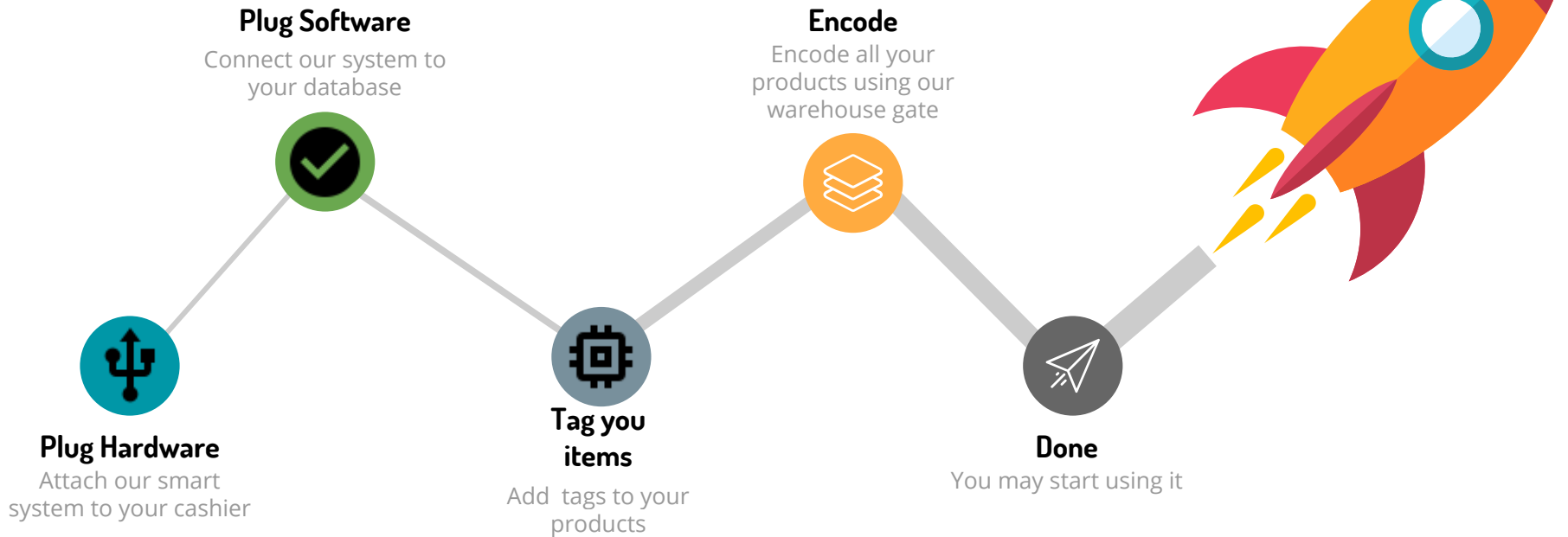
## Fast update

Instant bill on your mobile device.



# 5 Steps Launch Process

How to enhance your cashier



# Future work



## NFC Mobile App

### App Features

Extend mobile app to Android platforms and integrate NFC technologie

### Encode

Improve performance of bulk encode process

## Improve encode process



## Isolate structure

### Isolation

Confine a radiation only to the effective reading area

### Test

Test de solution in real scenarios with constant conveyor belt speed

## Real scenario tests



# DEMO

THANK  

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YOU

