

## Recyclabox Kiosk Project



### Introduction and Background

Recyclabox is a new project for the company Recyclabook. Recyclabook focuses on providing their customers with the easiest way of selling the goods they no longer need.

This project is heavily backed by members of the government and will transform the way UK consumers recycle their goods.

Recyclabox is a drop box that allows users to sell the goods they no longer need quickly and easily.

The goods initially received will be Books, Games, Phones and Tablets.

The kiosk houses a touchscreen monitor, barcode scanner, label printer, Camera and CPU, and a 'drop-chute' and storage area.

Users can sell their items to Recyclabox by interacting with the interface on the touchscreen monitor and following the steps:

1. Registering their items online or at the box, answering questions on the products condition.
2. Inputting their personal information including: name, email and mobile.
3. Attaching a 'Recyclabox Label' to their product for identification purposes.
4. Depositing their items into the box.

Funds will be transferred to their account within 3 working days to allow the products to be verified by a member of Recyclabox staff.



The contents of the Recyclabox are emptied twice a week, or when the box is reaching maximum capacity. This is monitored through the backend system. The stock is brought back to a central storage location and the items that the users have sold are verified. The stock is then uploaded to online sales platforms and sold.

Each item is assigned a stock-keeping unit (SKU) so that each item can be easily found.

When these items are sold, they are taken from the warehouse and packaged, and left in the correct dispatch area.

The project

Kiosk platform

The kiosk client allows a user to come to the box to register and sell their goods. This is accomplished via a touchscreen interface that takes the user through the process. Each item that the user selects is given a price and, if they are satisfied with that price, a label is printed to attach to the item and then a door opens to allow the item to be deposited into the kiosk.

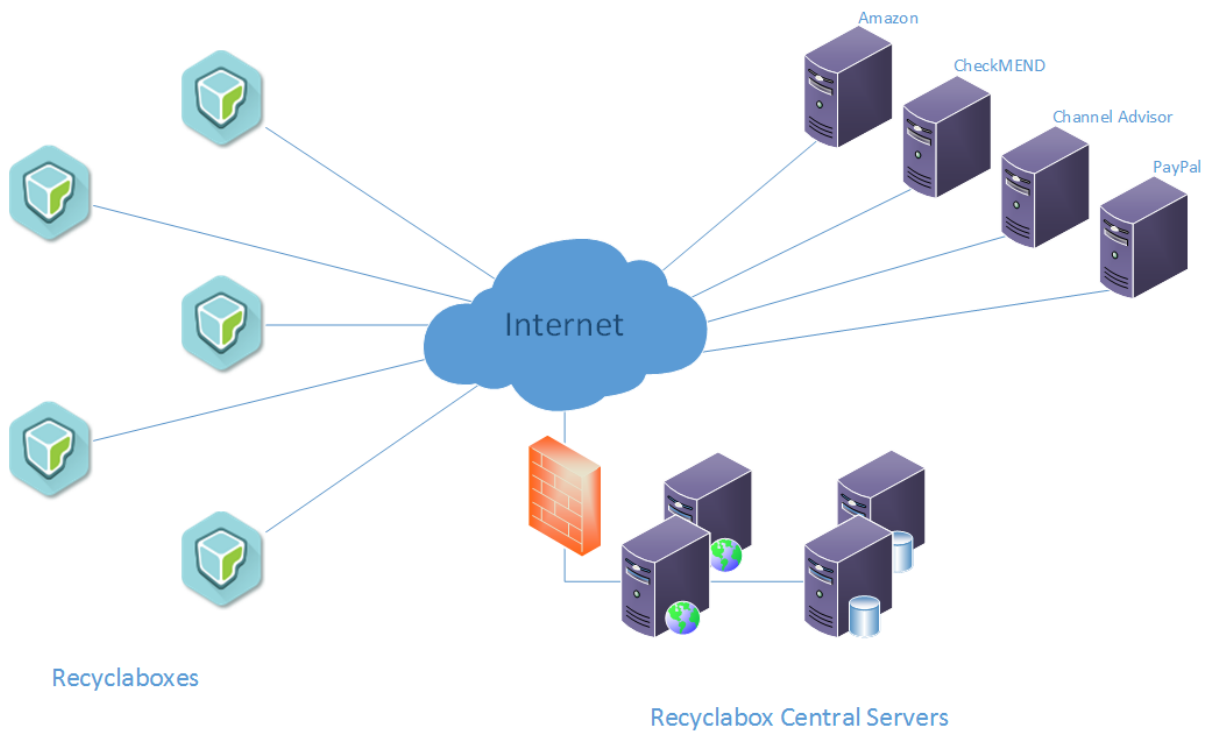
The client platform communicates with the central server via Web services to retrieve real time pricing for the products that have been select via the touchscreen or scanned via bar code.

All transactions are logged with the central server platform so that real time stock levels can be monitored along with the status of the various devices within the kiosk device.

Server platform

Staff can carry out actions using a back-end interface which include:

- Monitoring of the stock levels of each box at any time.
- Verification of the condition of goods as they come into our warehouse. For mobile devices, there is also an automatic look up to check if the device is blacklisted.
- Managing the 'pool' of stock keeping units (SKUs) and stock is automatically assigned a SKU once it is verified.
- Place stock in a 'problem' database if there is an issue with that product.
- Stock, once verified, is merged with existing stock and uploaded to sales platforms automatically.
- Maintain 'kiosk' locations on the system and monitoring of their "health".
- Automatic emails and SMS text messages are sent to users once they have a) registered, b) completed a transaction, c) stock is verified and is correct or d) stock is verified and is not correct.
- Management of customer payments via Paypal and bank transfer
- Referral and promotion scheme management
- Automatic KPI reports are generated weekly and monthly available to download.
- Stock management system, to automate optimised position of stock within warehouse
- Integration with online sales channels to sell stock automatically.



The solution involved the build of a central server system that would provide Web services to the deployed kiosks to provide live pricing with the minimum of user input, stock levels, kiosk status all within the central web interface. A Web service was created to handle the kiosks being able to provide the user with real-time quotation for the goods they want to sell. This meant that the complex algorithm to produce this price could be performed on the server as it has to make use of external pricing, sales rankings as well as internal factors including warehouse stock levels. The Web service also handled lookups for product information again via external third party sources so that a complete catalogue of products would not have to be maintained on each kiosk. On top of this the Web service handles kiosk status information, kiosk stock levels, transactions and promotions available.

This required extensive integration with third party platforms in order to provide price and product lookups, blacklist checking, uploading of stock into assorted external sales platforms and payment gateways so that all these tasks could be automated as much as possible and to minimise staff infrastructure required.

The central web interface had to support multi-level user types to map the back-end infrastructure, whilst allowing all Recyclabox staff to carry out their tasks from a simple web browser. The central servers provide the main “hub” of the business providing the full end to end infrastructure to manage the buying, selling and shipping of products all accesses via a web browser.

The system has now been running successfully for two years and is now being rolled out to major supermarket brands in the UK nationwide.