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WASTE2FUNC

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Abbreviations and Acronyms

Abbreviation / Acronym	Description
App	Application

1 Introduction

It is clear that the total volumes of organic waste, produced on a yearly basis, are enormous and yet still not exploited to the fullest, depending on the country or region in Europe. These volumes are on one hand an opportunity for projects such as Waste2Func, but on the other hand it is also a challenge to be able to collect and efficiently transport the waste to a specific location. This challenge is mainly driven by the fact that when legislation becomes stricter, smaller, and more geographically spread organic waste should be collected. More efforts will always result in more expensive logistic handlings, and thus an efficient approach is needed.

Ecoson Recycling already collects organic waste for years, mainly bulk and in pick-up rounds for some specific waste stream. Since Ecoson is part of Darling Ingredients International, they also have other companies in the group, that are almost equipped for the door to door pick-up rounds, because they are for example legally obliged to collect dead animals from farmers and households (Company Rendac). This type of waste is always geographically spread, rather last-minute and should be in small quantities. Because of a change in legislation, since 01/01/2024 Belgian companies are required to selectively separate all organic waste and have agreements with a waste collector/processor. Again, these are smaller quantities, more widely spread, and on a “on demand” base. Therefore, Ecoson Recycling wants to increase their capacity in this type of waste collection since they already had this experience via sister company Rendac (for dead animals).

Considering bigger volume bulk organic waste, both in Belgium and surrounding countries there is a clear market. For these volumes, techniques as anaerobic digestion have developed intensively in the last years. New projects aiming for the same raw materials will have to compete to other techniques, which will end up in price discussions. Therefore, setting up new supply chains for erratic waste types can be beneficial for both waste collectors as final processing companies.

To do so, Ecoson Recycling is developing an efficient registration and collection system to collect and source organic waste, which facilitates both the routing and administrative process from its companies site, as well as the handling and information flow for (potential) customers. With the knowledge Ecoson Recycling has from other companies in the group, and the support of the work done in the Waste2Func consortium, they have developed both a web portal and an application. New clients can use these tools to easily register and find their way to the company. Existing clients can use this tool to request a collection of their waste, track previous collections and find the administrative documentation they need for their bookkeeping.

2 Web application

The web application can be found via the direct link <https://melden-acc.ecoson.be> or on the main webpage of Ecoson.be, by clicking on “My Ecoson”. When arriving in the web app, the main login page (figure 1) will pop up.

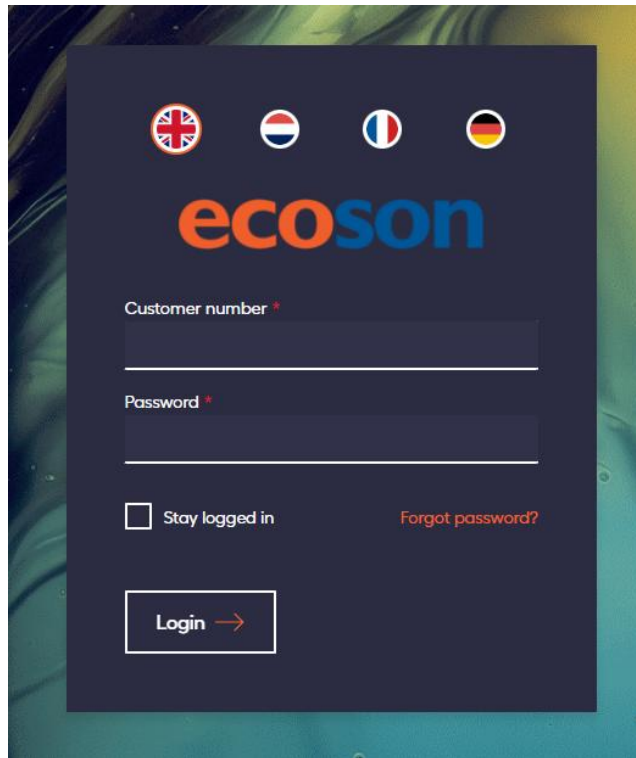


Figure 1. Main login page of the web application.

The application is, at this moment, available in 4 different languages, being English, Dutch, French and German. Before being able to login, the customer should have a customer number, received from an Ecoson commercial contact. This means it is not possible to login and start ordering waste pickups without prior screening or contact with the commercial team at Ecoson.

There are 2 different types of accounts for the MyEcoson portal, Master accounts and Subaccounts. Master accounts can be seen as “administrators.” These accounts are directly linked to a billing address. A master account has full access to all pages in the application. This type of account also manages its own subaccounts.

Subaccounts have access to 1 or more charging addresses within the same billing address. A subaccount has limited access to pages within the application and is managed by 1 master account.

After the login page, an overview page is shown (Figure 2) in which a customer can switch between, if applicable, multiple sites and can find overviews and direct links to all the app functionalities. Rather important to highlight is the reference to the BBI JU and Horizon 2020 programs, in the left below corner. By placing the mouse pointer on the logos, a pop-up text shows in more detail how this program did contribute to the website (Figure 3).

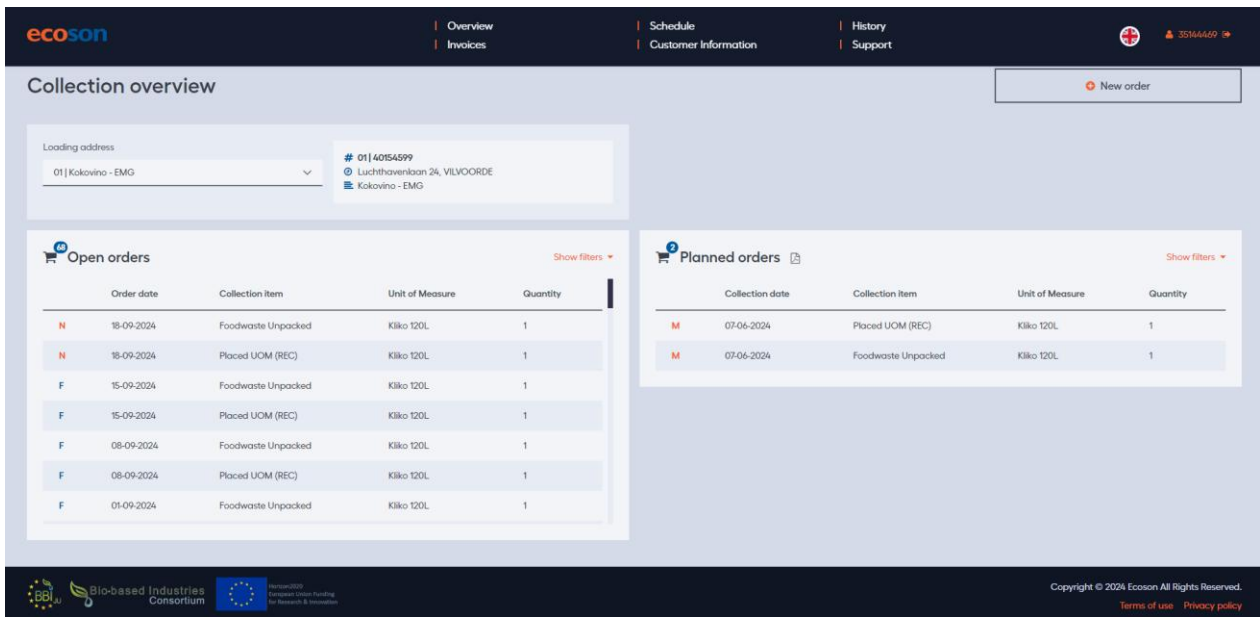


Figure 2. Main page of the web application.



Figure 3. Reference to the BBI JU and Horizon 2020 funding programmes, on the web app.

The functionalities of the web application will be elaborated more in section 3, describing the mobile application, since both web and mobile app have the same configuration.

3 Mobile application

The mobile application can be accessed with the following direct link : <https://outsystems-acc.dii.local/NativeAppBuilder/App?AppKey=995d38a2-493d-4d47-b910-e6c6dc8e7f4a>, and should be available on both Android and Apple app stores in a few weeks. Again, it is possible that the application is still in test mode, and not yet available with the link.

As for the website, also the mobile application shows a reference to the funding received (Figure 4).

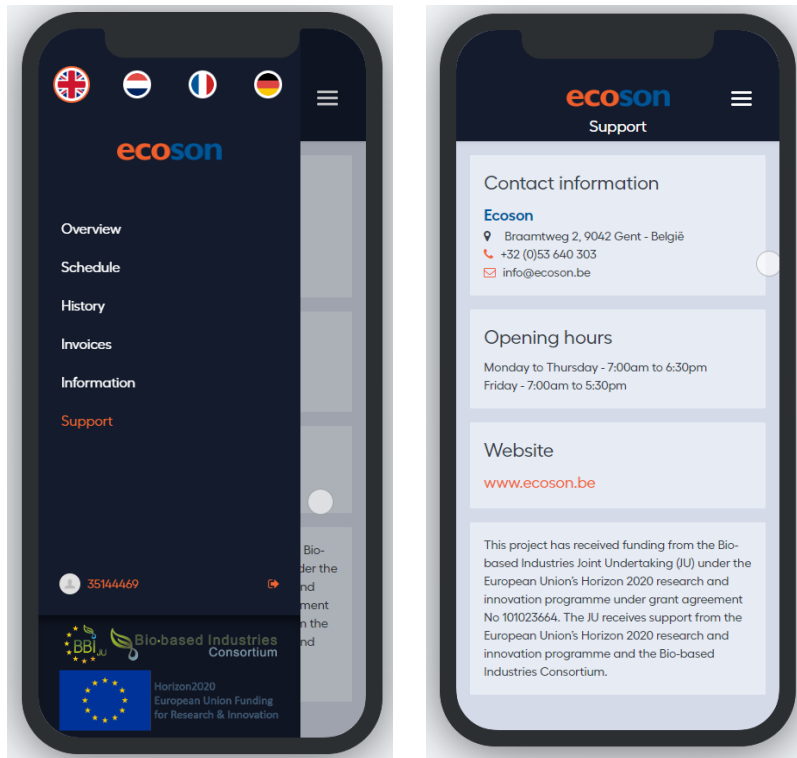


Figure 4. Reference to the BBI JU and Horizon 2020 funding programmes, in the mobile app.

On the following pages we will dig deeper into the functionalities of both the web and mobile application, if relevant to the case. For example contact information page, editing or creating accounts, will not be discussed in detail. The functionalities can be found by clicking the "hamburger" icon at the top right of the screen (Figure 5).

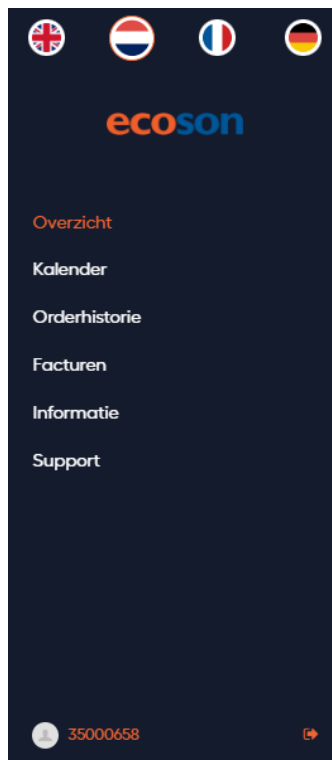


Figure 5. Main menu in the mobile app.

3.1 Order summary

In the order summary (Figure 6) it is possible to see which orders are open and which orders are scheduled for each loading address. Clicking on "Open Orders" or "Planned Orders" opens the list of matching orders. When the user click on the loading address, a menu opens containing all the loading addresses of the customer. Here the customer can search and select another address. It is also possible to filter the list by date by clicking on 'Show Filters'. Consequently, a calendar will pop up where the user can select a period by first choosing a start date and then an end date.

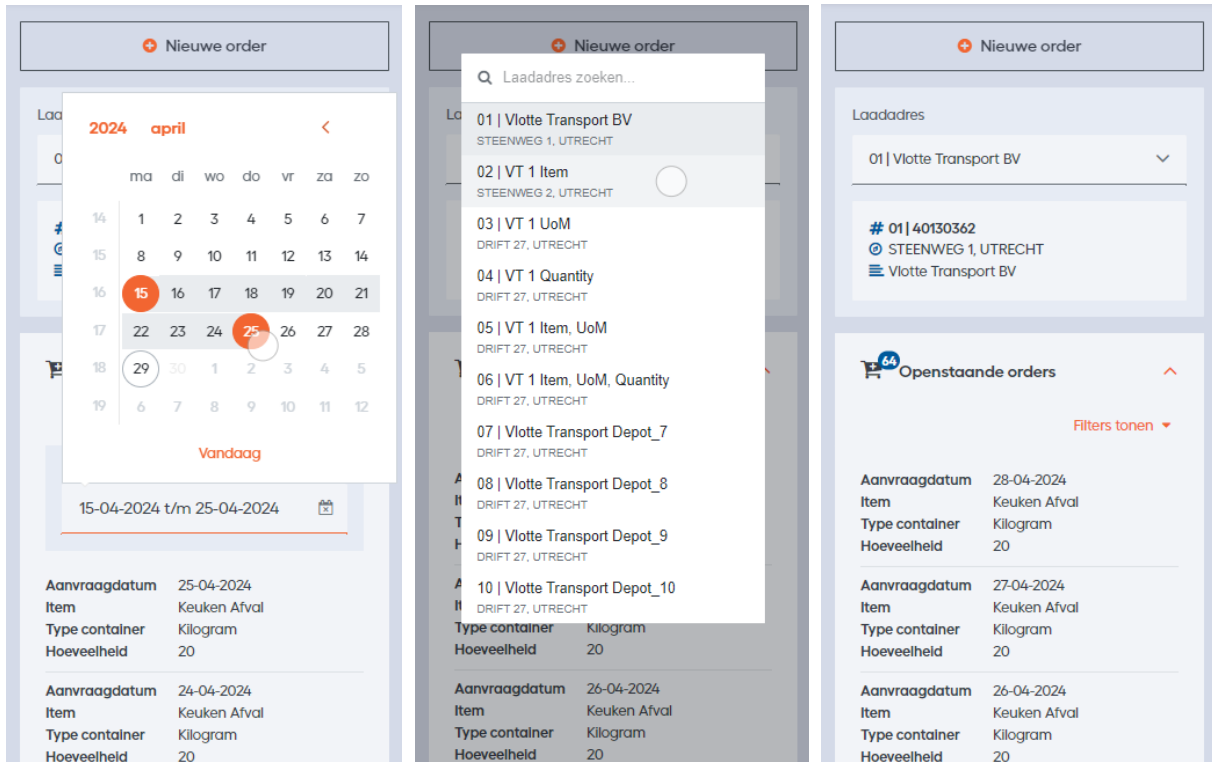


Figure 6. Order summary.

3.2 Request new order

From the order overview, the user can request for a new order by clicking the 'New Order' button. This will bring the user to a new screen. On this screen the user can request a new order in 4 steps (Figure 7).

- Step 1. Select a loading address.
- Step 2. Select an item, which defines the types of waste that can be collected on this site.
- Step 3. Select a container type and quantity.
- Step 4. Review the summary and confirm the order request.

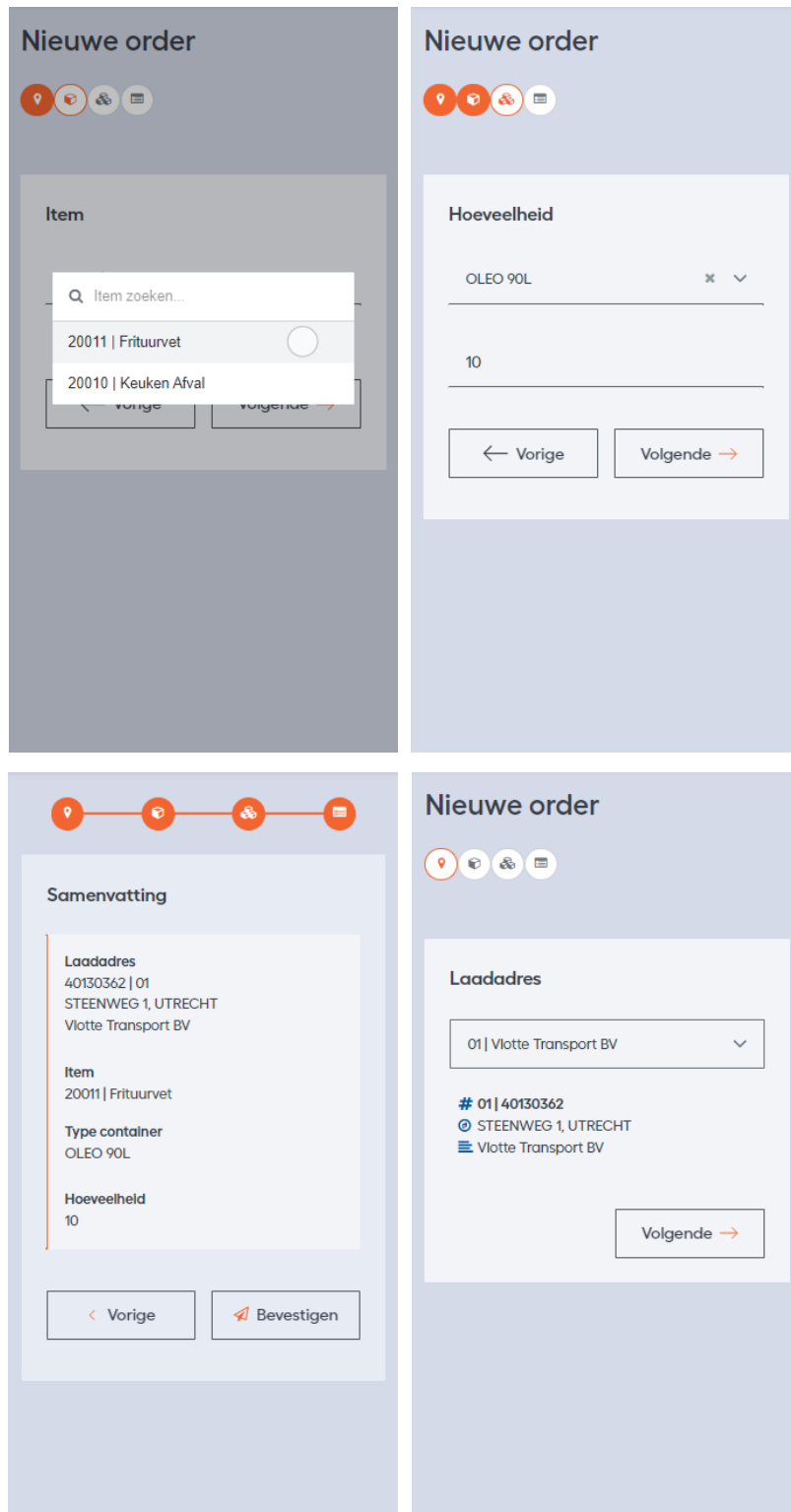


Figure 7. Different steps to order a waste collection.

3.3 Calendar

On this screen the user will find its fixed and planned orders. Fixed orders are frequent orders that are picked up via a specific schedule. Per loading address, the customer can view all fixed orders. It is also possible to determine a shut-down of the facility or a holiday, this to prevent pick-up when no product is available.

3.4 Order History

The history screen (Figure 8) shows the orders retrieved for each loading address. Using the filters in the first block, the user can select a loading address and a time period. Subsequently, the corresponding orders will appear in the list below. This list also shows the quantities collected and the transport documents that were used, filled, and signed. It is also possible to export these data to Excel without the transport documents in PDF. Note that no transport documents are add in the print screen on this test account. However, in the second print screen, a PDF file is shown as attachment on the web application.

Inzamelingsdatum	Item	Maateenheid	Hoeveelheid
04-04-2024	Schaap	Kilogram	999
04-04-2024	Schaaplammere	Vat	50
04-04-2024	Geit	Kilogram	99
28-03-2024			

Collection Date	Collection Item	Unit of Measure	Quantity
19-05-2024	C3 Bovine Bones	Kilograms	1500
15-01-2024	FS NL Other Animals	Pieces	1

Figure 8. Order history and transport documents.

3.5 Invoices

Here the customer will find all invoices. With the filter on the left the user can select a period. The invoices with an invoice date within that period will subsequently be displayed. To download the invoice as a PDF, it is possible to swipe from left to right over the specific invoice. The invoice will be downloaded immediately.

3.6 Customer Information

Under "Information," the user will first find a block of customer details and below that all the loading addresses associated with this customer and the account.

4 Integration of the applications

The web and mobile app are both customer portals, which show information that is useful for the customer. Back-office, when an order is placed in the applications, a notification is sent to the Ecoson in-house ERP-software “DAR-Collect.” In DAR-collect the order is shown in the list of incoming orders to be planned and picked-up by the logistic planning team to make the routing. In practice all orders are added to a list of the ‘to be planned orders,’ this is subsequently exported to the route optimisation software ‘Ortec’ after which the optimised pick-up route is sent back to DAR-Collect and E-Fleet.

Additionally, customer service receives an email, alarming that a pick-up is asked for, so they can interfere if needed for commercial or practical reasons.

Once the order is planned, this will be shown in the MyEcoson portal, as it will be after the order is completed and quantity and transport documents are available. There is no live tracking, the customers only get to see the pick-up date and planned container types. Potential changes in the planning can be automatically sent to customers.

With all the above efforts, Ecoson facilitates the efforts done by their customers with a simple and effective application, and facilitate Ecoson its own efforts by fading out phone calls, random email, WhatsApp messages and other media used to order a pick-up of waste.

5 Conclusion

Ecoson Recycling has created this web/mobile application based on the needs that came out of the Waste2Func project, *i.e.* a logistic solution for small scale collection of organic food waste, but at the same time also based on their own need to develop this internally. Since the scope was matching, the further development was supported from within the project and within Ecoson Recycling.

Overall, this has led to an application that served all needs that were discussed in all stakeholder workshops, both for farmers and general stakeholders. In addition, this also serves the customers of Ecoson Recycling in general which means the application will also be commercially exploited and actually used after the project as well. In general, this is a win-win for Ecoson Recycling as a company, for the biobased industry (e.g. TripleW and AmphiStar projects) that are looking for biobased feedstock and for stakeholders with organic (food) waste that needs to be collected, both on a regular and an occasional basis.