



User Document for Cesla Waste Management Website

Zihe Liu 21207341
Xu Zhong 21207315
Niu Miaohe 21207525
Shiqiu Yang 21207321
Ziqi Wang 21207298

Contents

1	Introduction	1
1.1	Visit the official page	1
1.2	Accounts	2
2	Login and Registration	3
3	Department Manager Instruction	3
3.1	Create order	3
3.2	Edit order	4
3.3	View history orders	4
3.4	View dashboard	5
4	Waste Manager Instruction	5
4.1	Capacity states	5
4.2	Approval orders	6
4.3	Ratio tables	7
4.4	Individual page	7
5	Individual User Instruction	7
5.1	Create order & address setting	8
5.2	View contribution	8
5.3	Waste recognition	9
6	Government User Instruction	9
6.1	Modify free proportion	9
6.2	View annual statistics	10
6.3	Future forecast	10
7	Contact Information and Technical Support	10

1 Introduction

The Cesla Waste Management System is an advanced solution designed to revolutionise waste management practices within Cesla Automotive. With the aim to minimise environmental impact and improve operational efficiency, this system offers real-time monitoring, efficient waste classification, and insightful data analysis. Catering to employees across production and office departments, the system provides a user-friendly interface accessible from various devices. By adopting this system, Cesla Automotive demonstrates its commitment to sustainability, compliance with environmental regulations, and leadership in eco-friendly practices within the automobile industry.

The Cesla Waste Management System offers a secure and user-friendly login and registration process tailored to different user roles within the organisation and external stakeholders.

1.1 Visit the official page

To start using our project, please visit the W-Management(<http://cs16220-2-vm1.ucd.ie>). This link will direct you to the intro page of the project where you will be guided through a brief introduction to the key features and functionalities of the Cesla Waste Management Website.

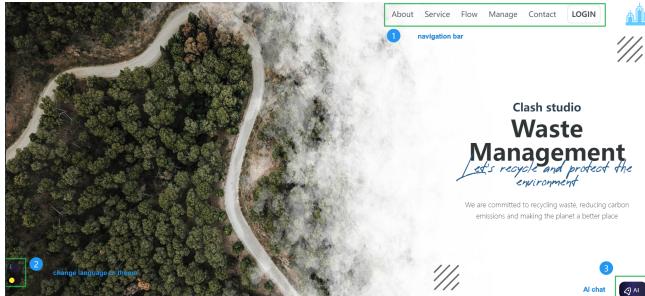


Figure 1: Index content

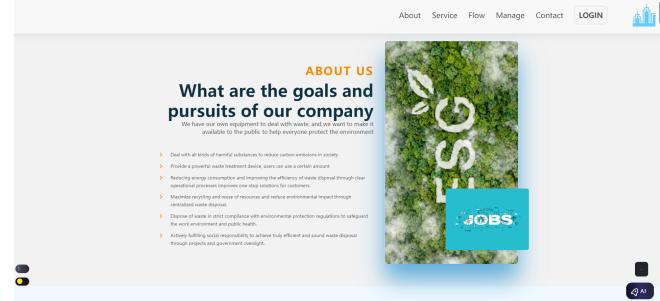


Figure 2: About content

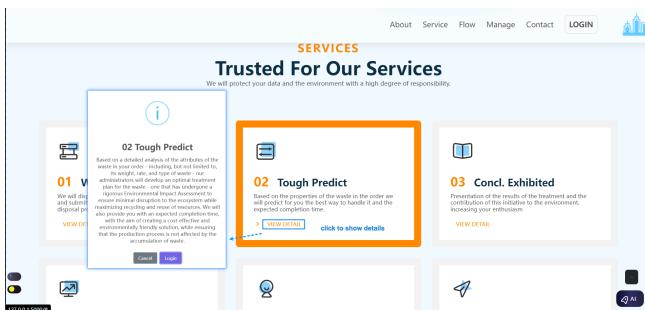


Figure 3: Service content

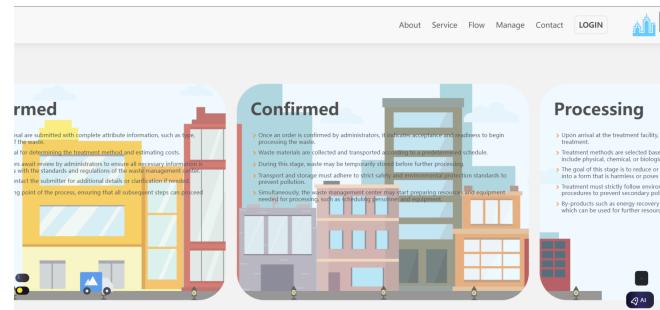


Figure 4: Work flow content

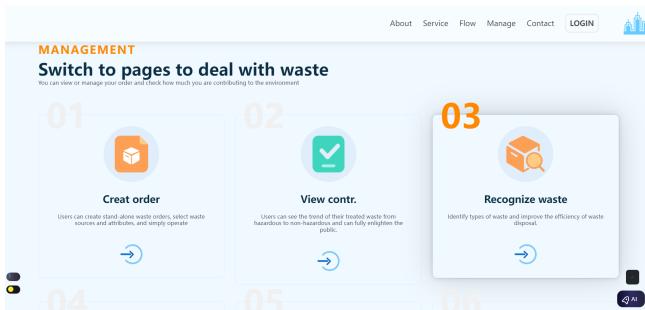


Figure 5: Function content

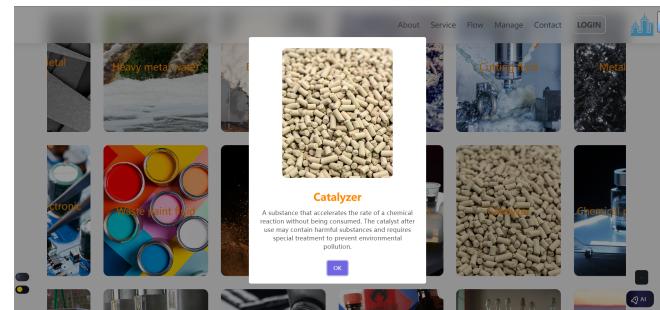


Figure 6: Hazard content

In **Figure 1**, you can use navigation bar to scroll to relevant content to view our company's information. As an **individual or government user**, the homepage will still display our company's information, but the navigation bar will become a **hyperlink** that allows you to go to different pages, instead of a scroll view. In **Figure 2**, it gives a brief introduction of our company. In **Figure 3**, you can see the services provided by our company, and click on *view details* to see more related content. In **Figure 4**, it shows the work situation and definition of our company for 4 statuses of the order, and you can deepen your understanding of the flow. This piece of content uses horizontal scrolling and

dynamic *city background* and *car patterns* to increase interest. In **Figure 5**, you can focus on concrete functions and quickly login to use our system. In **Figure 6**, it is a visual window that can *slide indefinitely*, dragging and dropping with the mouse, to show the hazards of different wastes, which can be shown in detail by clicking on the picture. The **switch Lang & Theme button** and **AI chat button** are fixed on the page, you can directly use them.

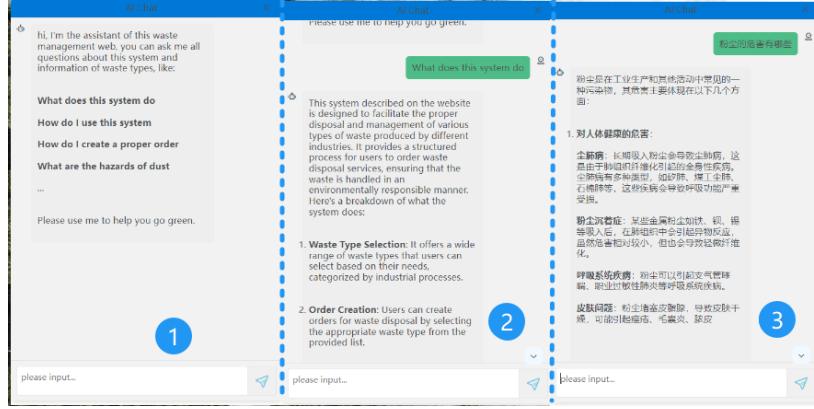


Figure 7: AI chat

In **Figure 7**, you can see the page of **AI chat**, and use English or Chinese to ask the question, and it can tell you all **information of Clash(our company)** and search online for relevant content or get answers from its native knowledge base. The use of streaming output content, more visually similar to the effect of ChatGPT, but on the server use may have a problem, because the call API is domestic (from China).

1.2 Accounts

- **Department manager:** Department Manager responsible for overseeing waste management within the responsible departments.
- **Waste manager:** Waste Manager tasked with managing waste processing status and view orders ratios.
- **Individual user:** Individual User can create all waste orders and analyse the waste.
- **Government user:** Government users can supervise the situation of Cesla company handling waste and urge processing.

User type	Username	Password
Department manager	department1	123456
Waste manager	waste1	123456
Individual user	user1	123456
Government user	government1	123456

Table 1: Accounts

2 Login and Registration

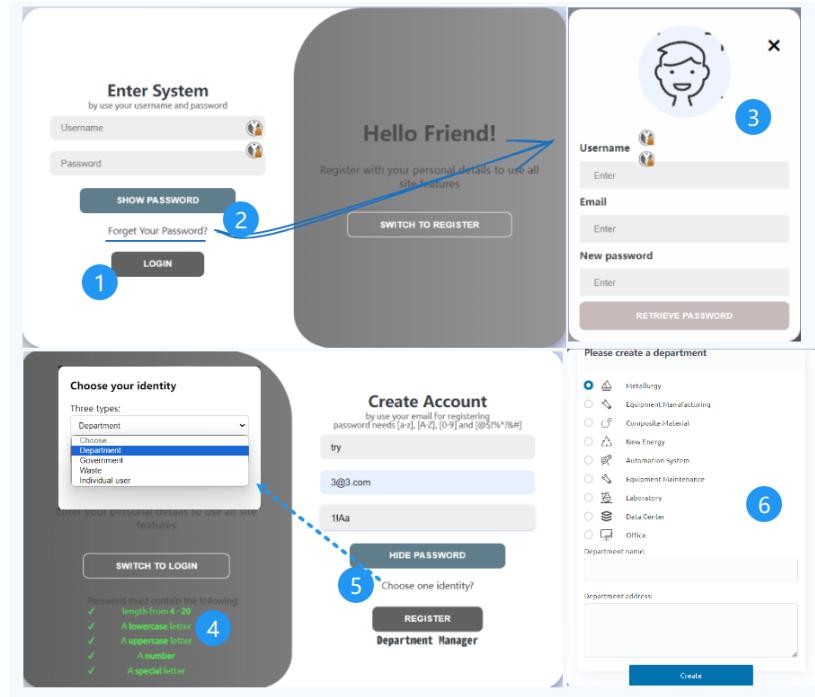


Figure 8: User Roles in Cesla Waste Management System

By clicking on the **Login button** or clicking on some events on the homepage, you can direct to login page, like **Figure 8**, you needs to enter the correct username and password to login, if you forgets the password, you can click on the **“Forget Your Password”** button[2] to show the reset screen (modal[3]). You can reset your password by typing existing username and its corresponding email. If you want to register an account, click on **“Switch to register”**, the username must not have existed before and the composition of the password must meet the requirements of the description[4], and click on **“Choose one identity”** button[5] to select the desired user type. When the department manager registers and logs in for the first time, the system mandatorily requires you to select the corresponding department type (choice[6]), and enter the department’s name and address information. If you are a waste manager, an individual user or government user, you will be redirected to the respective functional interface.

3 Department Manager Instruction

As **Department Manager**, it is incumbent upon you to document the waste orders that your division is capable of processing. You possess the prerogative to submit an unlimited number of orders. The customisation of the **“waste”** attributes can be achieved through the establishment of an order template. Furthermore, you are endowed with the capability to amend orders that remain in an unconfirmed status. As **Figure 9** showing, on the left side is the navigation bar, with the user positioned at the first item after logging in, where the interface for creating orders is located, which is the main task of your roles.

3.1 Create order

Figure 9: Create order

Figure 10: Apply template

In **Figure 9**, to create a waste order, you should fill out the “**Create Order form**” with details such as order name, waste weight, and some comments. You can view all waste hazards in slides[3]. Since different types of waste are produced, and the department has several fixed forms of waste output, it is necessary for you to select the “**types of waste**” that the current department can produce, as well as some “**attribute**” effects specific to the current waste (choice[1], input[2]). The current attributes are initialised, if you want to change the attributes type and create an order quickly, you can use the **Template** function by toggle button[4], in **Figure 10** you can view the template form. You should choose your waste type, input the template name (for the current user, the *template name* is unique). In region[2], you may introduce new attributes; however, the addition of new attributes is contingent upon the completion of all existing attributes. To remove an existing attribute, simply double-click on it. Buttons[3] show the function of apply or delete one template, if you want to apply one, you can view input[3,4,5] are settled correctly.

3.2 Edit order

All order statuses in **Edit Page** are unconfirmed. Only **unconfirmed** orders can be modified. Once the order is confirmed, it cannot be changed anymore.

The screenshot shows a web-based application interface for managing waste orders. At the top, there is a navigation bar with a 'Tables' icon and a dropdown menu for selecting the number of entries per page (6, 12, 15). Below this is a table with columns: OID, Name, Date, Type, Weight, and Operation. The table contains 6 entries. A search bar labeled 'Search' is positioned above the table. To the right of the table, a detailed view of a selected order is displayed. This view includes fields for Name (Mineral Residue Processing), Date (2023/06/04), Weight (60), Attribution (Tailing:95%), and Comment (Mineral Residue Processing). There are 'Cancel' and 'Confirm' buttons at the bottom of this panel. A dashed green arrow points from the 'Operation' column in the table to the 'Mineral Residue Processing' entry in the detailed view.

Figure 11: Edit order

You can see all the **unconfirmed** orders on this page and change the quantity displayed on each page by option[1]. Also you can click “**Date, Type, Weight**” in the box[2] to sort. Meanwhile **search box[3]** is used to search for any data and provides searched content below. Click the **small eye icon[4]** to view the content of the corresponding order and make changes, **trash icon[5]** is aim to delete the corresponding order.

3.3 View history orders

The screenshot shows a 'History orders' page. At the top, there is a 'Total statistics' section with four colored boxes: blue for 'Unconfirmed' (7), orange for 'Confirmed' (2), red for 'Processing' (3), and green for 'Finished' (0). Below this is a 'Tables' section. It features a table with columns: Serial num, Name, Date, Type, Weight, and Status. The table contains 6 entries. A search bar labeled 'Search:' is located above the table, along with filters for Unconfirmed, Confirmed, Processing, and Finished status. A dashed green arrow points from the 'Status' column in the table to the 'Processing' status in the total statistics section.

Figure 12: History orders

If you want to check the history logs, you can choose the **History Button** in the navigation bar(Figure 9). You can check all history orders in the History Order page (**Figure 12**). The interface displays all historical orders information submitted by yourself, including four different statuses, and also allows for sorting and searching, similar to **Edit page**.

3.4 View dashboard

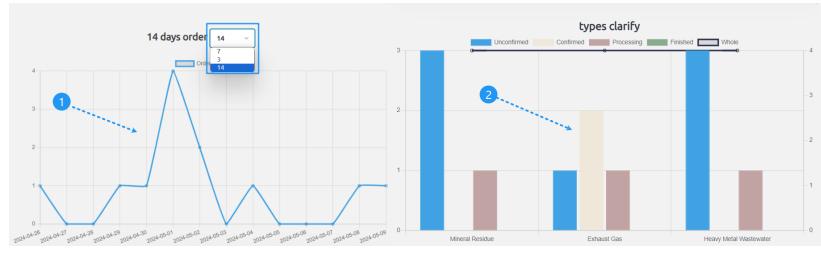


Figure 13: Department dashboard

In line-chart[1], left side table shows recent days orders' number tendencies and can change days by 3, 7, 14. In right bar-chart[2], you can see the number of different statuses of waste orders that your department can manage, which may be reference for waste manager to adjust approval speed and process to avoid wasting or exceeding processing capacity.

4 Waste Manager Instruction

As **Waste Manager**, your role involves overseeing the status of all internal and external orders, determining the current stage of completion of the orders within the entire processing workflow. In **Figure 14**, on the left is the navigation bar, which includes five areas. From the navigation bar, you can learn that the three main functions of the web-page corresponding to the waste manager are: viewing the capacity, approving the application for waste disposal, and viewing the ratio. *IN & EX* refers for managing *Department Manager* and *Individual User* orders.

4.1 Capacity states

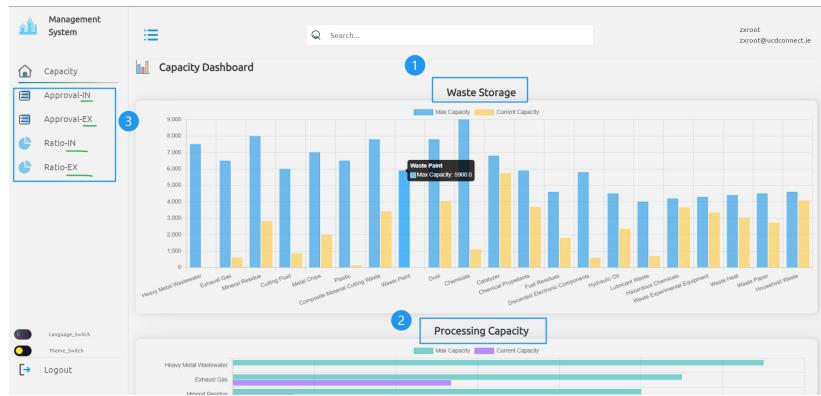


Figure 14: Volumetric compartment

Waste manager can see the “**Waste Storage**” (bar-chart[1]). In the place you can see the maximum limit of each waste can be temporarily stored and the weight that has been stored so far, it will show the storage situation under the **confirm status**; you can also see the “**processing capacity**” (bar-chart[2]), it shows the limit capacity of each waste can be processed, that is, the storage situation under the **processing status**. It also shows the processing capacity, which is the limitation of each waste, i.e., the storage situation in the processing state. When you wants to change the status of an order, the corresponding storage must be able to accept the weight of the order, otherwise it will prompt that storage is not allowed.

4.2 Approval orders

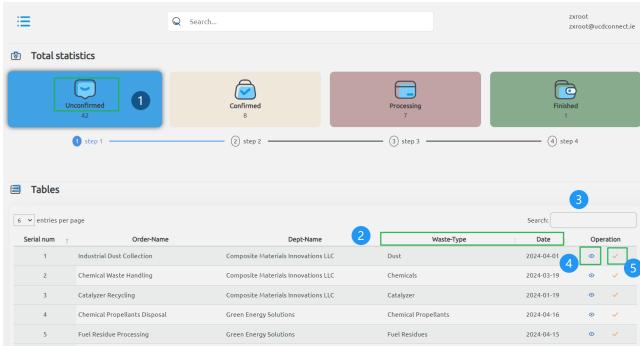


Figure 15: Unconfirmed table

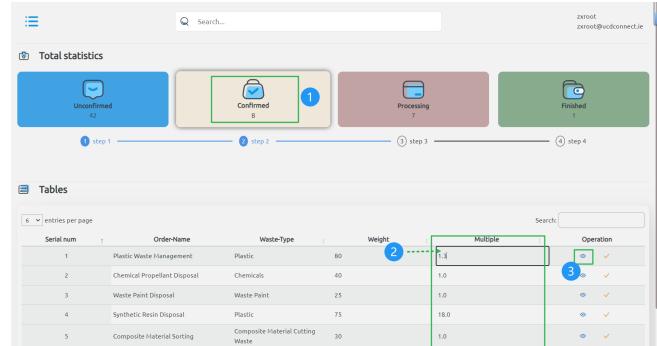


Figure 16: Confirmed table

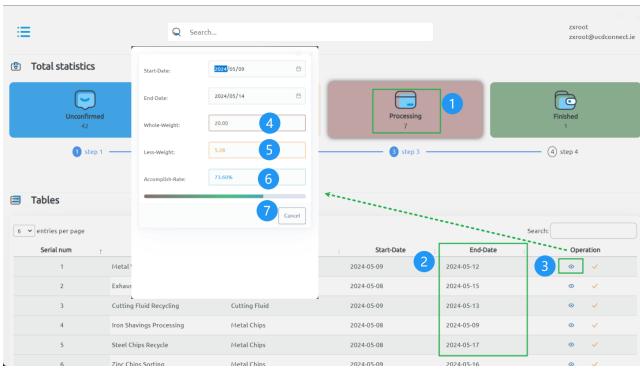


Figure 17: Processing table

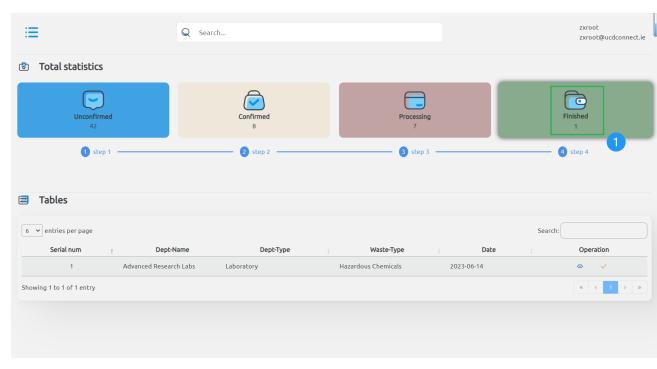


Figure 18: Finished table

There are 4 steps in order management:

- In **Figure 15**, you can see all “**Unconfirmed Orders**” and manage them. Click box[1] can switch to the unconfirmed table, the order[2] can show different sequence of these orders, the search box[3] can show whatever you want to view, the *eye icon*[4] will show the details of one order, the *tick icon*[5] can confirm one order, the system automatically assesses the waste storage required for the corresponding waste type before confirming the work order. This assessment will ensure that the corresponding storage warehouse can accommodate the current weight, if the weight is too large will alert you, if the weight meets the requirements will change the state.
- In **Figure 16**, you can see all “**Confirmed Orders**” and manage them. Click box[1] can switch to the confirmed table, *eye icon*[3] can see all details of one order like some attributes, you can accord to the special condition to set the process multiplier that reveal the difficulty of handling, you can directly click[2] on the table to change it. Like it said above, the order can change status to **Processing**, and also need to check the processing capacity of this type of waste, and the corresponding weight equals to original weight multiple the multiplier. Then the waste storage will release the weight.
- In **Figure 17**, you can see all “**Processing Orders**” and manage them. Click box[1] can switch to the processing table, the “**End-Date**”[2] refer to the estimated date of completion, it relies on machine learning, *eyes icon*[3] will see the current order processing progress, number[4] is whole original weight of this order, number[5] is remaining unhandled weight, number[6] is the accomplish rate, bar[7] is the dynamic progress bar for improved aesthetics. The order will automatically switch status on the expected completion date, or the order can be finished in advance through the waste manager, and the occupied processing resources will be released once the current order is finished.
- In **Figure 18**, you can see all “**Finished Orders**” and manage them. Click box[1] can switch to the finished table, it will show all finished orders and the finished date.

4.3 Ratio tables

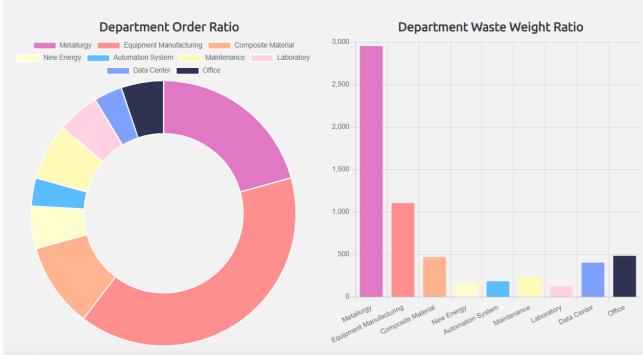


Figure 19: Department related ratio

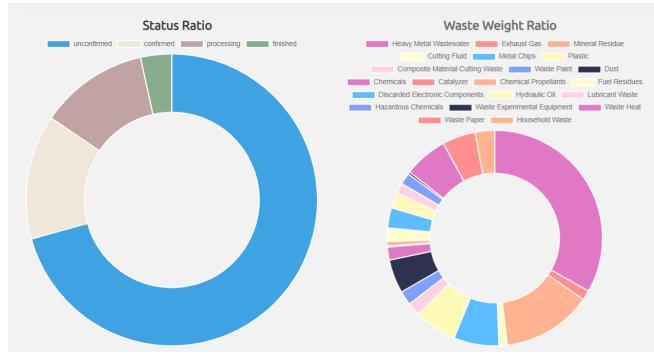


Figure 20: Waste related ratio



Figure 21: Switch chart style

In “Ratio page”, you can see all departments and wastes’ orders number ratio. In **Figure 19**, you can see different departments’ order number ratio at left, and order weight at right. In **Figure 20**, you can see different status order number ratio at left, and all wastes’ number ratio at right. Like **Figure 21**, above these pie ratio charts can be converted to bar number charts between each other by click name area[1]

4.4 Individual page

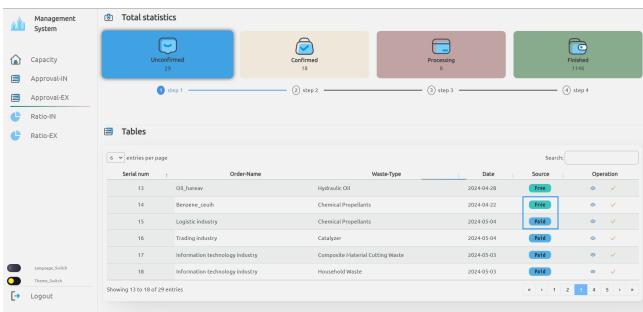


Figure 22: Individual orders table

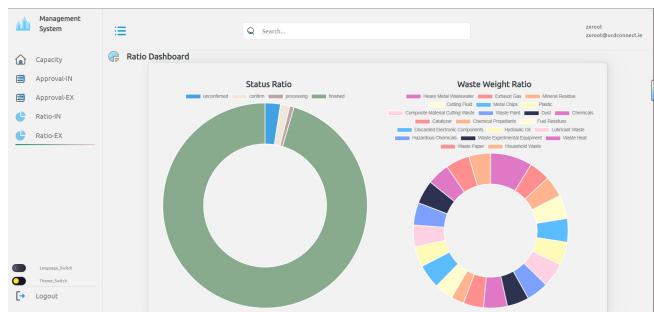


Figure 23: Individual orders ratio

In **Figure 22**, one difference between *Department Order* and *Individual Order* is you can view the paid or free condition of one order, because the individual user can create orders by paying if the order-weight is overflowed. In this condition you can prioritise processing the orders that have paid. In **Figure 23**, the **Individual ratio** will show for different status and types, not involve department information.

5 Individual User Instruction

As **Individual User**, you can use free proportion to create all types of waste order, and pay for the overweight order, you can also use templates. In **Figure 24**, you can see there are 3 main function pages you can do (*Home* is just main page to introduce our company), you can create order, view your-own contribution and orders, and analyse one image’s all waste types.

5.1 Create order & address setting

This figure shows two side-by-side forms. The left form, titled 'Create Order' (1), has fields for 'Order name', 'Weight' (kg), 'Attributes (percentage)' (e.g., CO2), and 'Order comment'. The right form, titled 'Templates' (2), allows creating a template by inputting a name, selecting a waste type, and adding attributes like CO2, SO4, and Fe.

Figure 24: Create order

This figure shows the 'Create Order' interface again, but now with a template applied. The template 'Fluid1' is selected, showing attributes like N2, O3, and CO2. The right side of the interface shows the template's details and a preview of the applied template.

Figure 25: Apply template

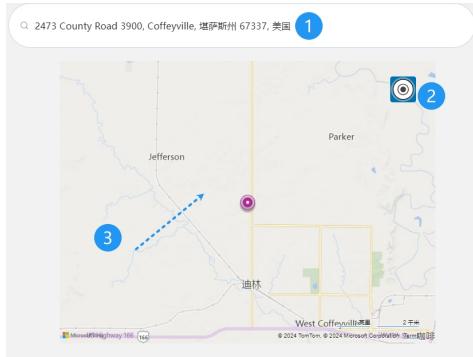


Figure 26: Auto address



Figure 27: Search address

You can upload all 21 types of waste to deal, and you need to “**Create Order**” (form[1]) by fill all input areas in **Figure 24**. You can also create “**Various Templates**” (form[2]) to accelerate order’s creation and “**modify the attributes**” (input[3]) of each waste order (because in template you can custom attributes content). For any type of waste, there is a certain amount of “**free disposal weight quota**” (input[4]). Therefore, when the weight exceeds this limit, additional payment is required. (in **Figure 32**).

In **Figure 25**, you can “**create your own templates**”, button[1] is to add one new attribution, and in area[2] you should input all data before add new, existed input can be removed by *right-click* on it. Button[3] is for **applying opposite template**, and you can view area[4,5,6] are be settled of corresponding information.

In **Figure 26**, you can view that your own original location address will be caught automatically, you can click optional position or resize the camera in map[3] to get any where, you can click button[2] back to original position. In **Figure 27**, you can directly search for any position and accept it.

In **Figure 32**, you can view one payment qr-code example, you should scan it and get the verification code.

5.2 View contribution

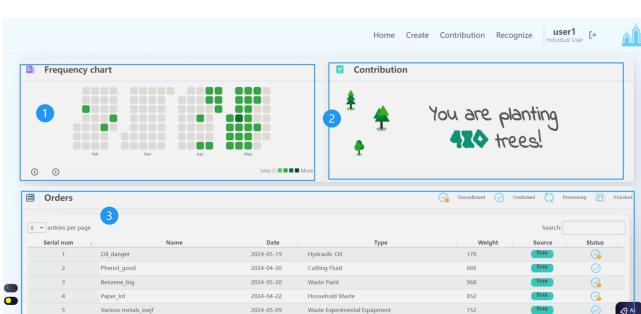


Figure 28: Contribution



Figure 29: Anime example

In **Figure 28**, you can see “**heat-map**” (chart[1]), this will illustrate the daily order submission counts over the span of one year due to the present day. “**Environment contribution**” (animation[2]) dynamically illustrates the

equivalence of contributions to trees, water, air, energy, and soil based on the types, weights, and special attributes of all orders created by you. It also displays the quantities of harmful substances eliminated. The entire content is presented in an engaging animated loop (**Figure 29** shows other examples). **Table[3]** shows all of your own orders.

5.3 Waste recognition

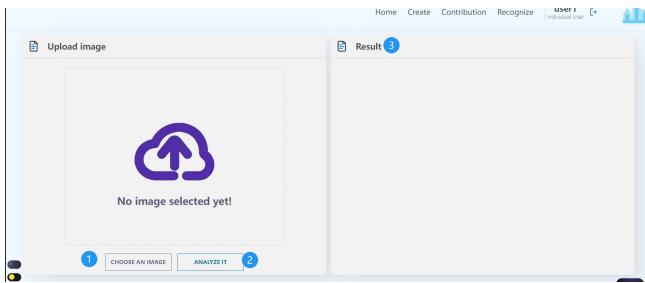


Figure 30: Upload image

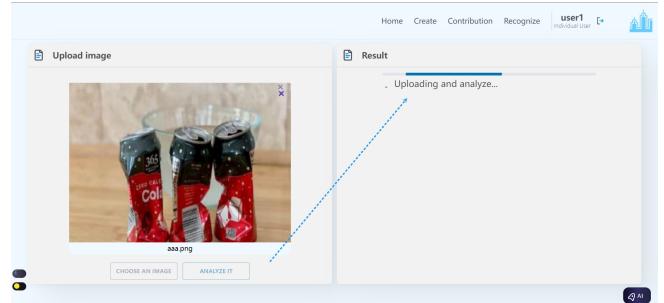


Figure 31: Analyse waste

In **Figure 30**, you can **choose one image** (button[1]) to upload one waste picture, and then use button[2] to analyse it, the image will be sent to the system's back-end for waste identification and analysis, with the waste types and cropping results displayed on the right panel[3]. You can view the progress in **Figure 31**, and view the results and details like **Figure 33**.

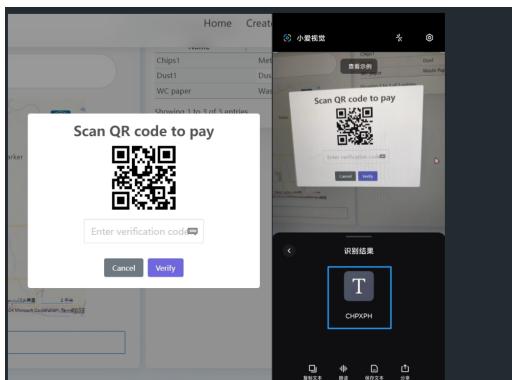


Figure 32: Pay QR

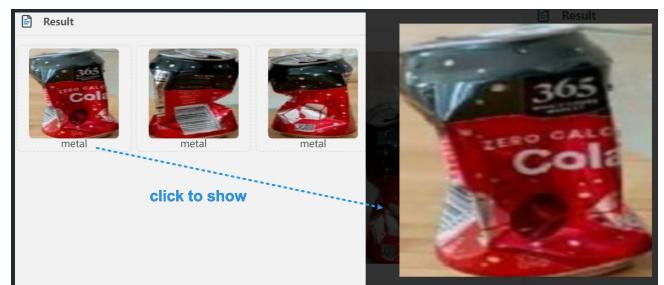


Figure 33: View image

6 Government User Instruction

As **Government User**, in **Figure 34**, on the top is the navigation bar, which includes 4 areas, you can do 4 things: return index page(information page), set waste free proportion ration, view annual statics, and view forecast 5 days trends of 21 types to deal. You can monitor waste disposal in real-time through charts provided by the system. You can view multiple styles of charts, with data updating in real-time.

6.1 Modify free proportion

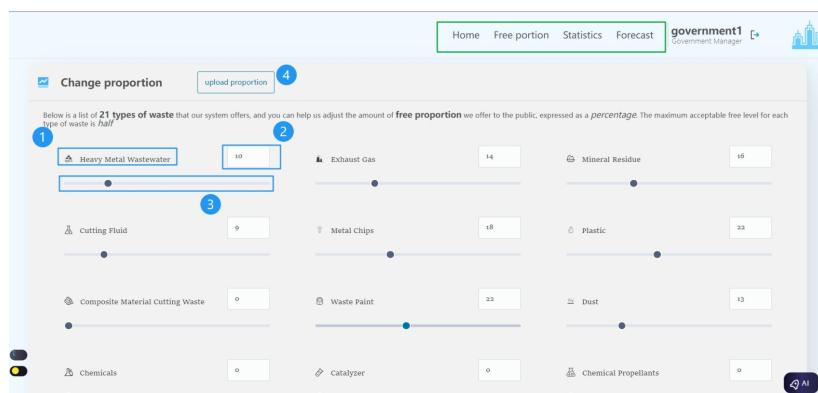


Figure 34: Set Free proportion

You can get all 21 types of waste free proportion in the **Figure 34**, which means that *individual users* can use the processing capacity for free of each waste type, if the order weight is exceeded, the user needs to pay a certain additional fee. You can view all “**Waste Name**” (label[1]), “**Concrete free ration & progress bar**” (number[2], bar[3]), you can type in number[2] or just drag bar[3] to set the ratio, both of them are binded, and the most ratio is 50% of each type’s whole capacity, then type button[4] to upload proportions.

6.2 View annual statistics

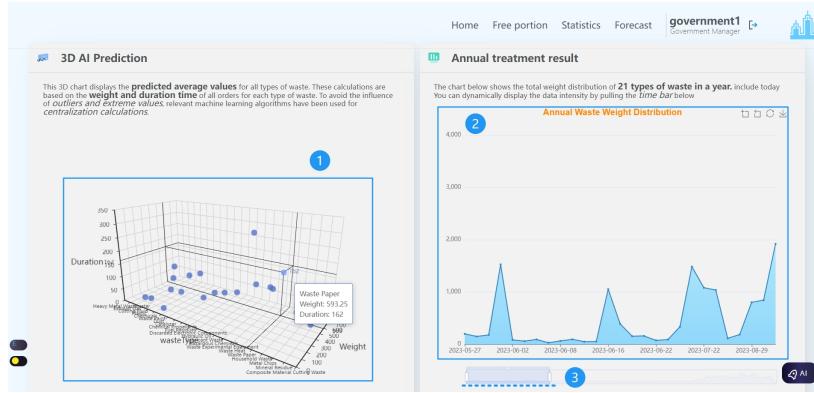


Figure 35: View statistics

You can view a “**3D Relation Chart**” (chart[1]), you can rotate it to view all 21 waste types information, which makes a **central forecast** based on the *duration* of finished orders and the *weight* processed, reflecting the correlated average of the weight and duration for that type. You can view all finished weight sum in a year up to the day in real time (chart[2]), you can scroll the above timeline bar (bar[3]) to change the chart appearance.

6.3 Future forecast

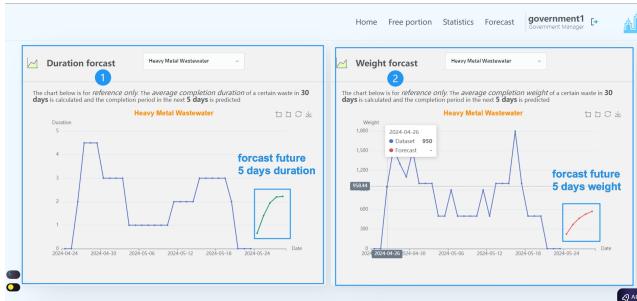


Figure 36: View forecast1



Figure 37: View forecast2

In the **Figure 36**, based on the **duration** and **weight** of the orders finished within the *last 30 days*, predict the duration and weight that each type of waste may undergo processing in “**the next 5 days**”. You can see the related charts for duration and weight on the left (chart[1]) and right (chart[2]) sides. In the **Figure 37** you can change any type to view the forecast result.

7 Contact Information and Technical Support

For technical support and assistance, please contact us at: xu.zhong@ucdconnect.ie.