

GIS TRACKS FOOD PRODUCTS(SUPPLY2U)

SOFTWARE VERSION 1.0

AUTHORS:

- 1. IAN NDOLO MWAU**
- 2. NEEMA OGAO**
- 3. DAVID NZAMBULI**
- 4. MAUREEN NYAGA**
- 5. PHARIS KARIUKI**

ABSTRACT

In the world we live in today, the agricultural sector continues to play a significant role in the growth of economies throughout the world. With the development of new technologies, it's imperative to take a look at how we can automate certain aspects of the value chain that starts from the farmer to the retailer selling the products. Specifically, we aim to address issues geographically.

Our software is currently using the following technology stack:

- ReactJS for the frontend
- Python Django for the backend
- Django REST Framework for API development
- PubNub for websocket management to ensure real time delivery of information\
- Leaflet as our main mapping library
- PostgreSQL as our Relational and geographical Database solution.

INTRODUCTION

Globally and especially in East Africa, agricultural supply chains, small-scale farmers, agro-dealers, and urban retailers face significant challenges in ensuring food products' efficient, sustainable distribution.

Consumers increasingly demand to know the origins of their food, and retailers require precise information to manage inventory and meet consumer demand. Inefficiencies in the agricultural supply chain lead to high post-harvest losses, inconsistent quality and availability of produce, and inflated prices due to multiple layers of intermediaries.

There is a critical need for a transformative geographical platform that seamlessly connects these stakeholders, prioritizing efficiency, sustainability, and profitability throughout the supply chain.

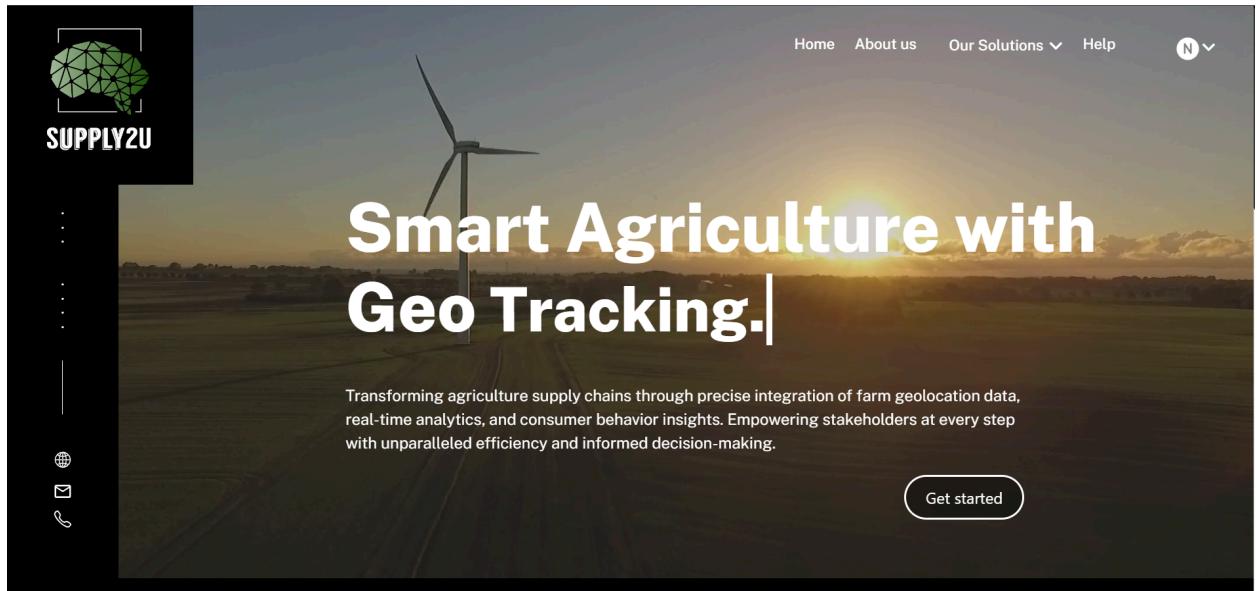
With this software, we're revolutionizing how agricultural supply chains operate from farm to retailer. Our innovative platform seamlessly integrates geolocation data of the farms, real-time transport monitoring, and actionable geographical data insights to empower stakeholders at every step of the supply chain. We aim to focus on efficiency, sustainability, and profitability, transforming how stakeholders connect and thrive in a dynamic market through a geographically holistic, data-driven, innovative approach.

SOLUTION IMPLEMENTATION

This section includes a sequenced description of key areas and functionalities of the software with screenshots to support relevant information.

1. Login/SignUp:

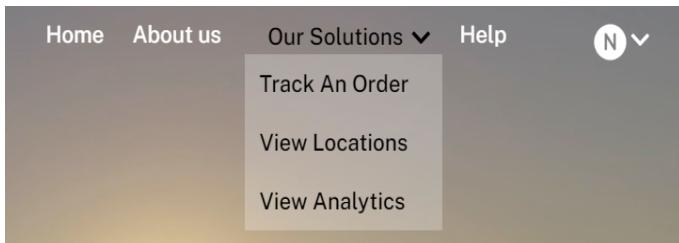
When the administrator loads the website at first, He is taken to the landing page.



Here they are provided with a concise description of what the website is about and then they proceed to create an account or log in to the platform through their credential or google work email:

The image displays two side-by-side forms on a dark-themed web page. The left form is titled 'Sign Up' and includes fields for First Name, Last Name, Email, Password, and Confirm Password. It also features a 'Have An Account?' link and a 'LOG IN' button. The right form is titled 'Log In' and includes fields for Email Address and Password, along with a 'Forgot password?' link and a 'LOG IN' button. Both forms are set against a background featuring a large, stylized illustration of a tropical plant.

When the user is all logged in, they can proceed to choose any of the solutions they want to navigate to through the dropdown menu at the top-right corner:



2. Field and Location Mapping.

To view this functionality, the user navigates to the view Locations option where they are navigated to a page where they can visualize all the current mapped-out locations and fields on a map and a filter form on the left pane to filter out the content they see on the map:

A screenshot of a map application interface. On the left, there is a sidebar with a search bar, "Location Filters" (with dropdowns for "All Regions" and "All Labels"), and sections for "Locations Found (12)" and "Farms Found (8)". The main area is a satellite map of Kenya. Several locations are highlighted with blue outlines: a large one around Naivasha and Kitale, another around Marsabit, and a smaller one near Dadaab. A green circle with the number "12" is placed over the Naivasha/Kitale area. The map also shows numerous place names like Nairobi, Eldoret, Kisumu, Mombasa, and Lamu. At the bottom of the map, there are buttons for "Add Location", "Add Field", and "Clear", along with a "Mixcloud" button. A copyright notice "Leaflet © Google Maps" is visible at the bottom right.

a) Adding Locations and Fields

To add locations or fields to the map, the user clicks on the buttons at the bottom of the pane and chooses where they are navigated to the respective pages to enter the information:

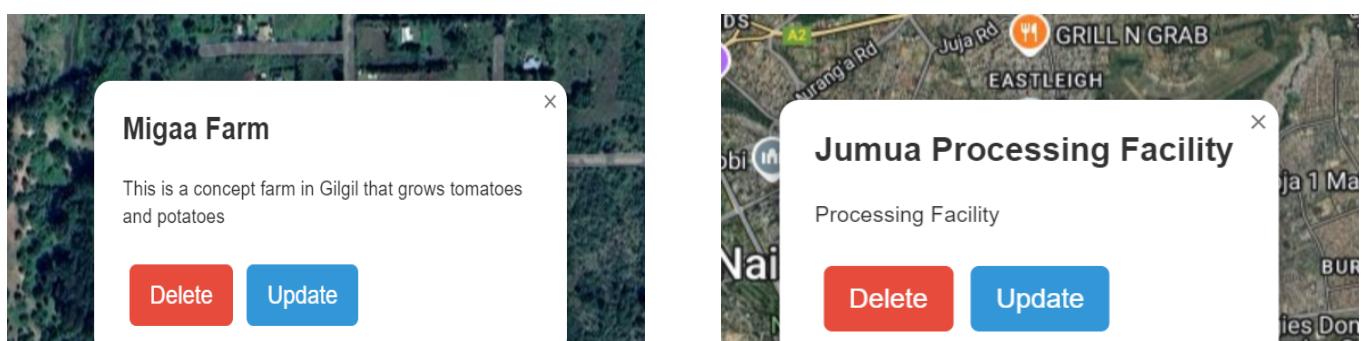
The image consists of two vertically stacked screenshots of a map application interface.

Top Screenshot: The title is "Enter Location Details". It contains fields for "Location Name" (Add Location Name), "Identification Number" (Add Identification Number), "Label" (Select Label), "Latitude" (Add Latitude), "Longitude" (Add Longitude), "Region" (Select Region), and "Description". To the right is a satellite map of Kenya showing various regions, rivers, and towns like Nairobi, Nakuru, and Mombasa. A legend at the bottom right indicates "Leaflet | © Google Maps".

Bottom Screenshot: The title is "Add Field Drawing". It contains fields for "Field Name" (Enter Field Name), "Identification Number" (Enter Identification Number), "Description" (Enter Description), and "Produce Farmed (at least one required)" (Produce Type 1, Variety 1, Add Produce). The right side shows the same satellite map of Kenya as the top screenshot, with the Leaflet | © Google Maps legend at the bottom right.

b) Updating Locations and Maps:

To update the locations and maps already saved into the database, the user just has to click on the component they want to edit and choose the action to carry out:



After clicking the update button, the user is taken to a where they can edit the information:

Update Location Details

Location Name

Identification Number

Label

Latitude

Longitude

Region

Description

Update Field Drawing

Field Name

Description

Produce Farmed (at least one required)

Farmer

Area

c) Filtering the data

The user can also choose what they want to visualize on the map, by applying the filters provided on the information displayed from the database. For example, the user can choose to visualize only processing facilities:

Similarly, the user can filter out farms that produce maize only:

PROJECT CODE LINKS.

Portfolio website: [GITHUB PORTFOLIO WEBSITE CODE](#).

Frontend GitHub repo: [FRONT END GITHUB REPO](#)

Backend GitHub repo: [BACK END GITHUB REPO](#)