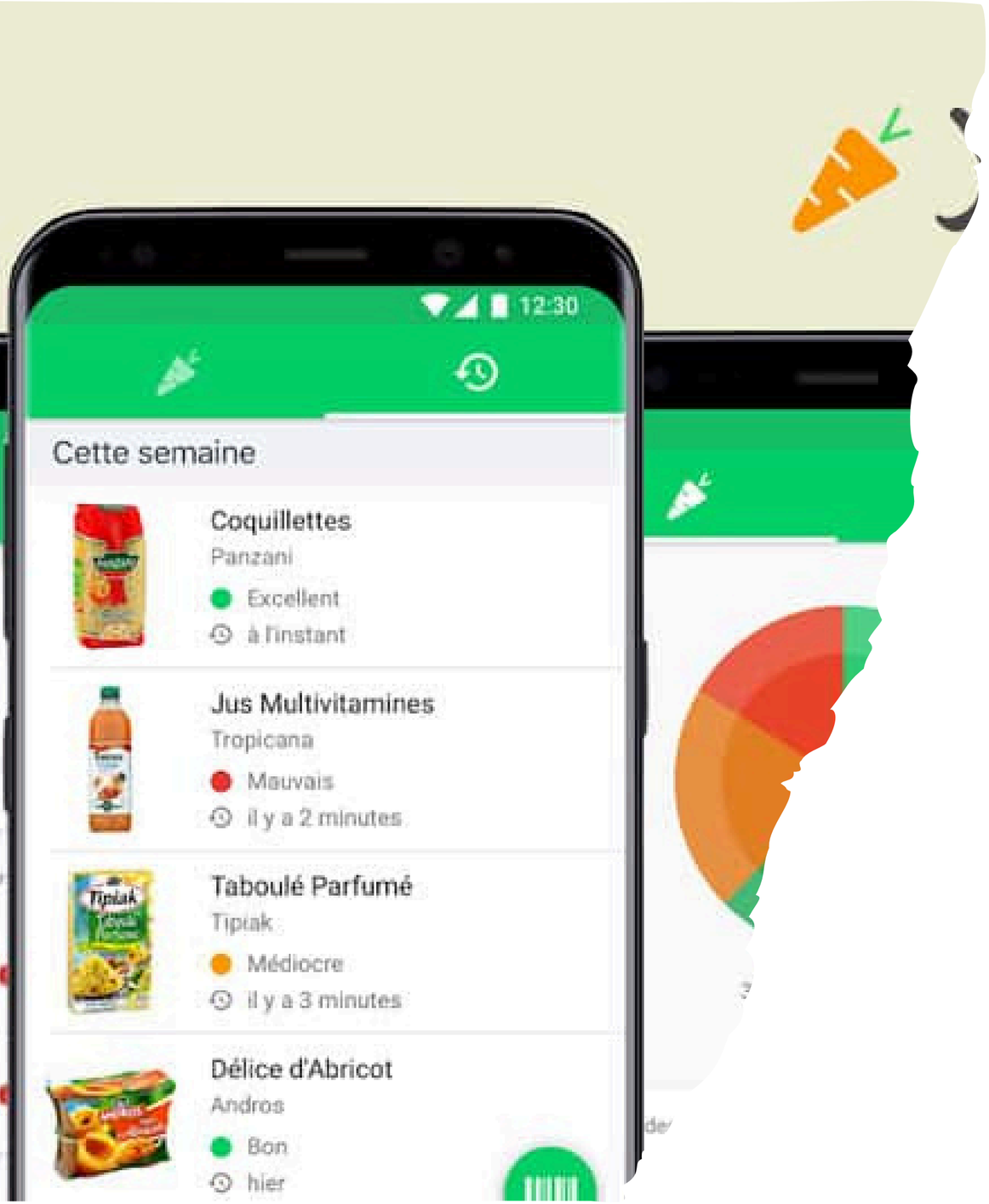
Ironhack

Project presentation

Carbon Foodprint

Valentin Perraud

CARBON
FOODPRINT



Business Case

Everyone needs to go buy groceries. What if you could make an impact while doing it ?

Consumers want to shop sustainably, but:

- No clear info on a product's CO_2 footprint
- No visibility into supply chain emissions
- No tool to track their impact over time

An interactive app (inspired by Yuka) that:

- Lets users build a shopping cart
- Shows CO_2 breakdown per product and stage
- Tracks carbon impact over time
- Encourages low-emission choices

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01/
Data sources

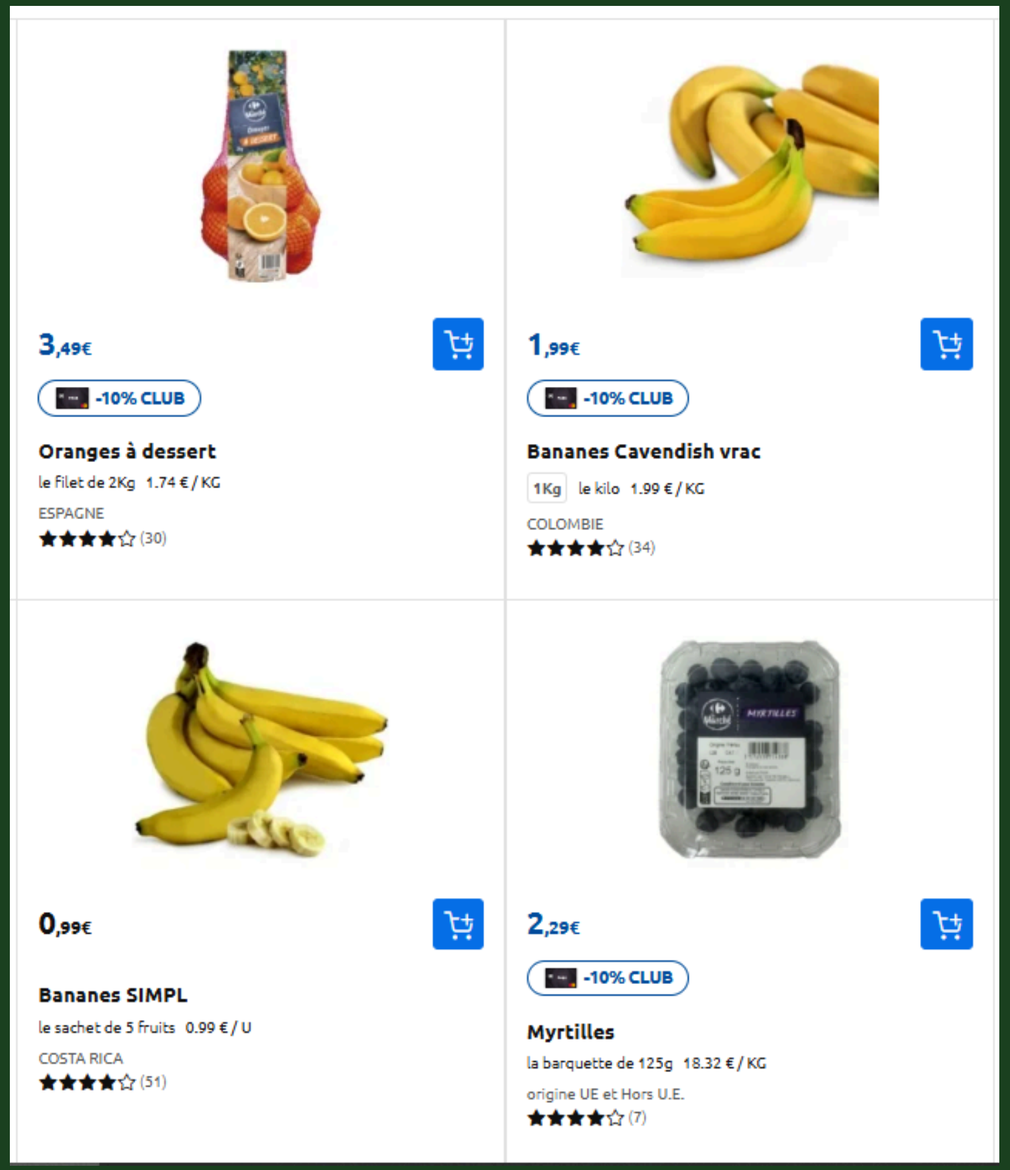
Carrefour (CSV):

- Network calls to get ~17000 products (VPN...)
  - Product_name
  - product_category
  - Price
  - Price/kg

Impact CO2 by ADEME (JSON with 150 entry):

- Footprint/kg
- Supply chain division:
  - Farming
  - Processing
  - Transport
  - Packaging
  - Retail
  - Consumption

01/
Data sources




```
{
    "name": "Poulet",
    "slug": "poulet",
    "ecv": 4.56043,
    "footprint": 4.56043,
    "footprintDetail": [
        {
            "id": 30,
            "value": 3
        },
        {
            "id": 31,
            "value": 0.83
        },
        {
            "id": 32,
            "value": 0.378
        },
        {
            "id": 33,
            "value": 0.305
        },
        {
            "id": 34,
            "value": 0.0406
        },
        {
            "id": 35,
            "value": 0.00683
        }
    ]
},
```

02/
Journey – Data Transformation

- Matching carrefour extract with ADEME table
  - Handle specific name : cacao → chocolat
  - *re.search(keyword, word, re.IGNORECASE) or ratio(keyword, word) > 0.85*
  - Remove null values

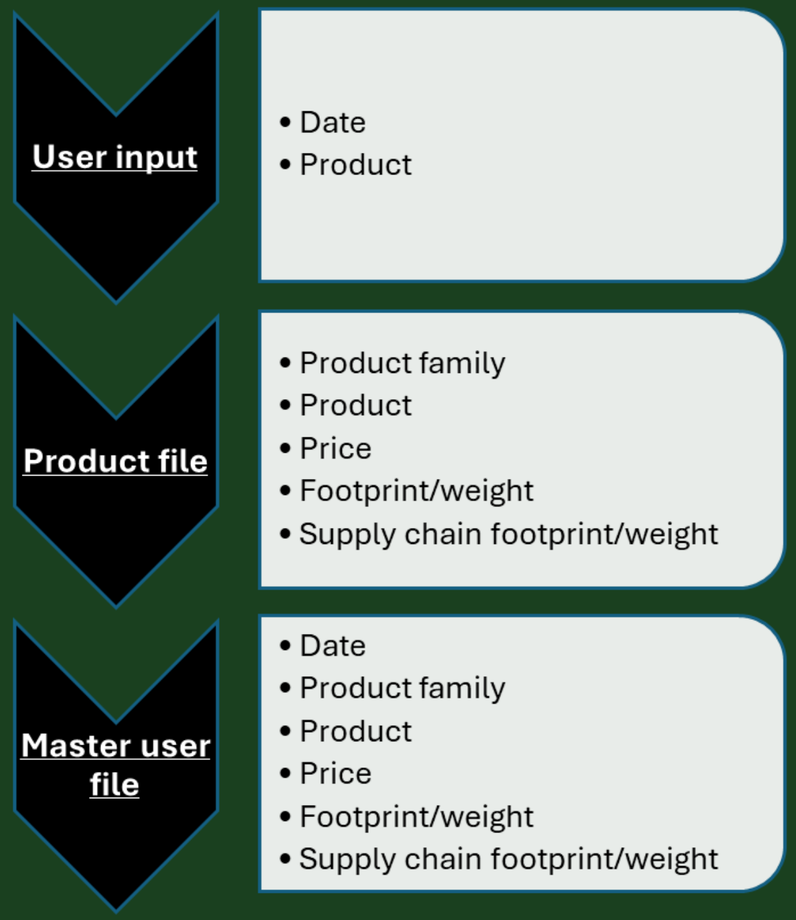
- Estimate product weight using the formula:
  - Weight = Price ÷ Price per kg
- Calculate carbon footprint by applying the estimated weight to footprint values per kg.
  - Apply it to supply chain division

- Use a random function to create data for the master_file
- Put all the tables in SQL

02/
Journey – User Input

- **Chat GPT API:**
  - Upload a photo of your receipt.
  - ChatGPT extracts product titles and formats them into structured data.
  - Prompt :
    - *This is a scanned receipt. Extract only the list of products under the "Description" section. If there are values on the QTE x P U column, repeat the line above in "Description". Ignore prices, totals, and other metadata. Return the product names in a JSON format*
  - Products are matched against the database using fuzzy logic.
  - Matched products are added directly to the master_data table in SQL.
- **Cart :**
  - User selects products from a dropdown menu (based on product table).
  - Selected items are added to a session-based cart.
  - "Submit Cart to your profile"
    - selected items are stored in master_data in SQL.

Workflow:



```
of daily groceries

per week with supply chain percentage

 total_co2_kg) * 100, 2), '%') AS farming_percentage,
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total_co2_kg) * 100, 2), '%') AS retail_percentage,
on / total_co2_kg) * 100, 2), '%') AS consumption_percenta

te, '%d/%m/%Y')) AS year,
te, '%d/%m/%Y'), 1) AS week,
2) AS total_co2_kg,
rming) AS farming,
ocessing) AS processing,
ckaging) AS packaging,
ansport) AS transport,
tail) AS retail,
nsumption) AS consumption
```

03/ Application

```
of daily groceries

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03/ Application

Summary:

- Backend in SQL, app in Streamlit and diagrams in plotly
- Filters:
  - Week/Month/Year
  - Specific period seletion
- User input:
  - ChatGPT API
  - Cart
- Dashboard:
  - Period specific diagrams
  - Trend diagrams
- Advices on what actions to take:
  - Category with the highest impact

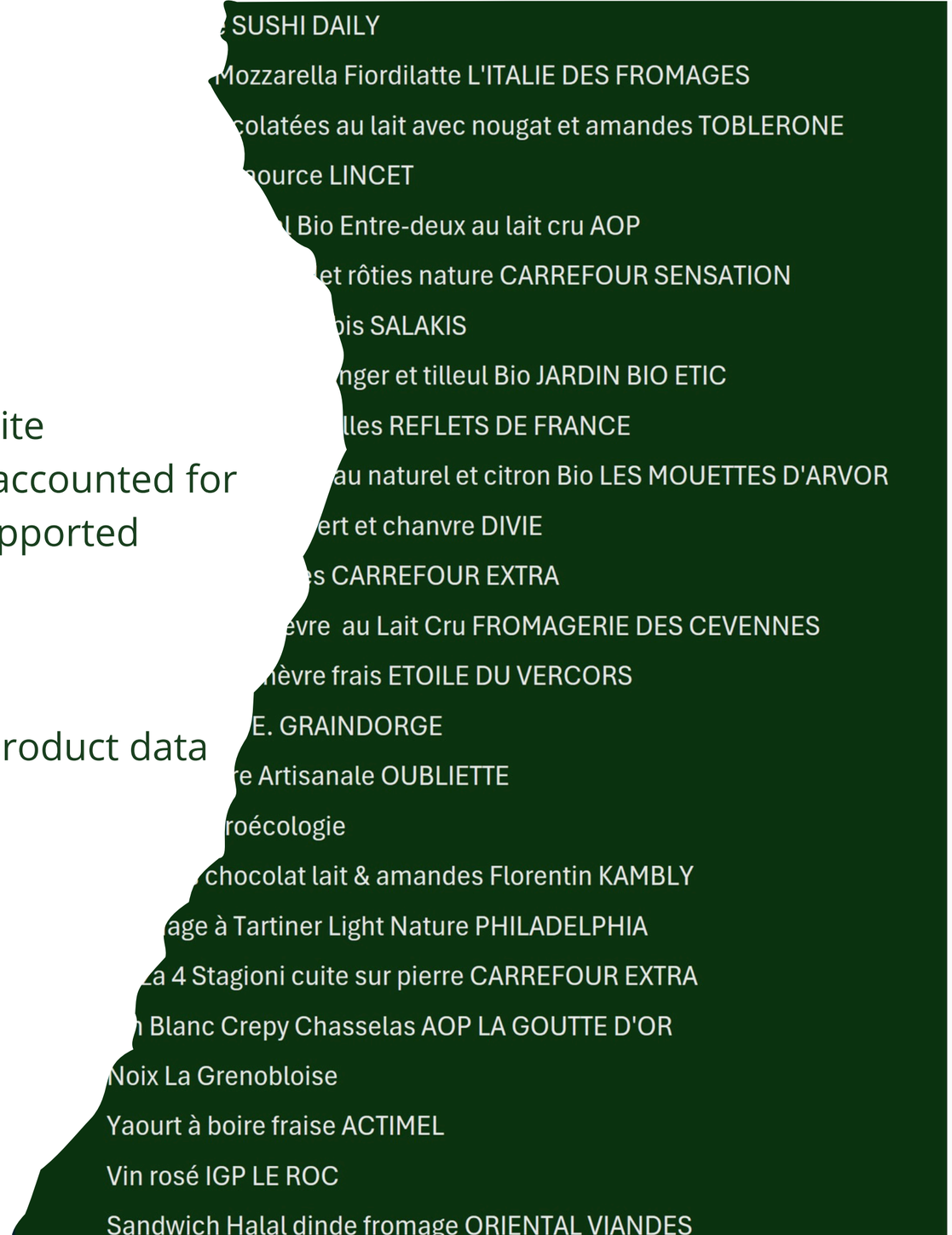
04/
Conclusion

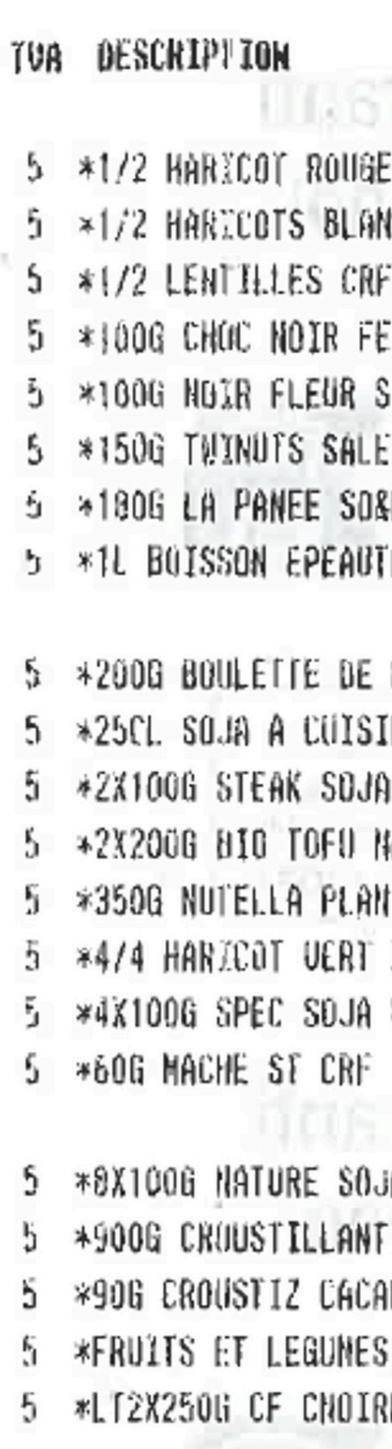
Limitations:

- Hardware difficulties
- Receipt text format differs from website
- Manual quantities (e.g. produce) not accounted for
- Multi-ingredient products not fully supported

Improvements:

- Use ingredient % for better accuracy
- Train fuzzy logic to match receipt ↔ product data
- Add a scanning option
- Add user accounts
- Publish tool online





04/ Conclusions

- Educates consumers
  - Dairy and meat have a higher impact
  - Supply chain impact :
    - Farming >> Transport
- Reduces food-related CO_2 emissions
- Enables carbon tracking per purchase

Join me in transforming grocery shopping into a climate solution.

Let's make every receipt a step toward a greener future 🌎

And don't forget:

It's our daily choices that will shape our tomorrow. Together, we can make an impact

Ironhack

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Thank you for your attention and good luck in your life

Special thanks to Jacquie, Eevee and Token

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