Agricultural Planner

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//Problem

POLLUTION

Wrong allocation of the lands for the given crops would lead to an increased usage of pesticides, fertilizers, and other toxic farm chemicals which are among the leading source of pollution in many countries

REVENUE LOSS

Revenue loss caused by the allocation of fertile land to non-agriculture related areas & wrong crop-land matching

HIGH EFFORT

Access to the right farming resources (seeds, manure, ...) requires serious time and effort from the end-user which leads to the employment of bad farming practices

//Solution

TUM.ai
Makeathon
2022

DATA DRIVEN CROP SELECTION

By choosing the right crop for the right land and employing **Regenerative Agriculture** techniques, our system would decrease the need for pesticides, fertilizers, and other toxic farm chemicals while promoting **Sustainable Agriculture**
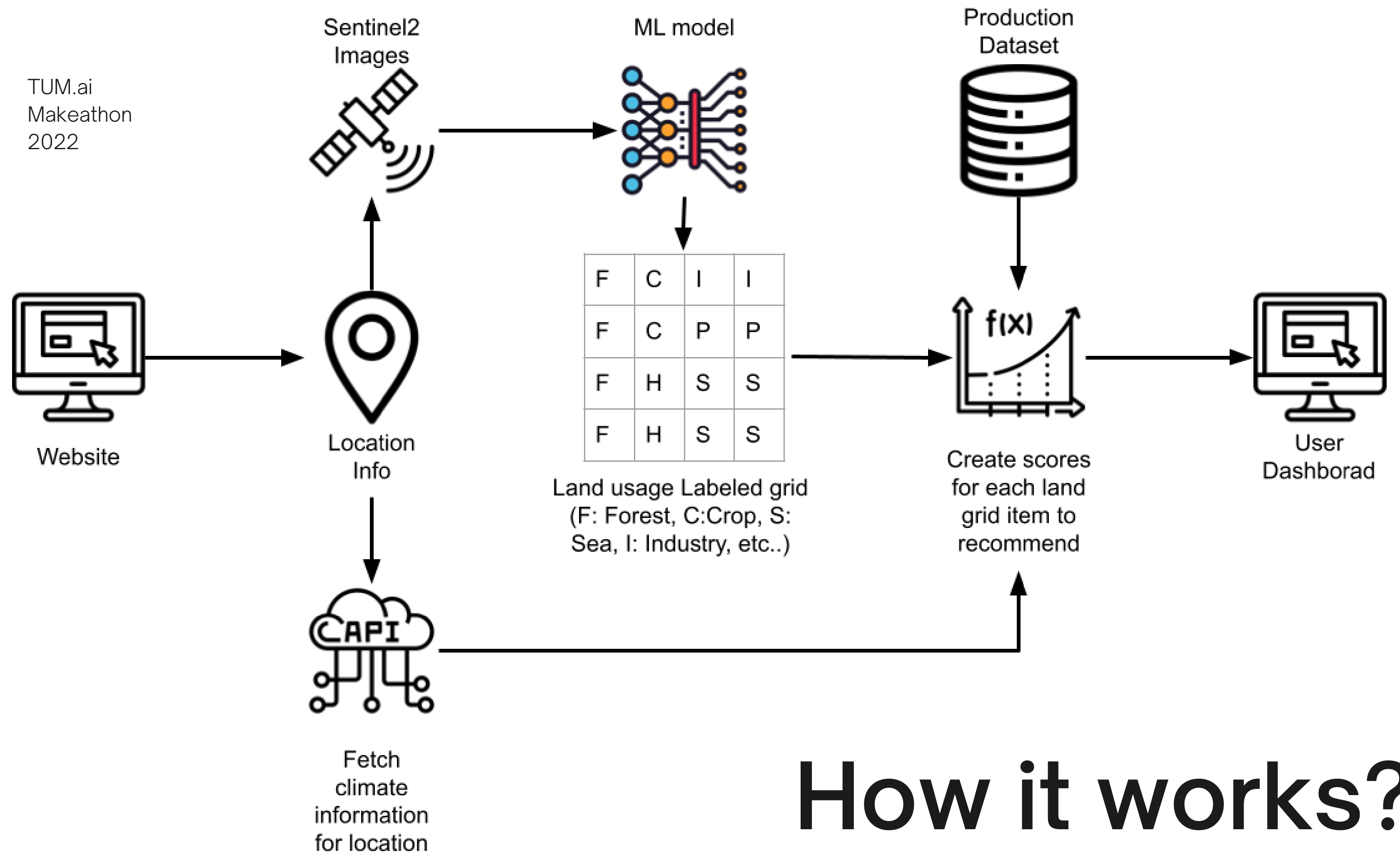
DATA DRIVEN LAND ALLOCATION

With our data-driven land classification, we would be ensuring that no fertile land would go to waste

EASY TO ACCESS MARKETPLACE

By creating a marketplace where users would be able to buy everything they need, we would be making sustainable agriculture more accessible

TUM.ai
Makeathon
2022

Sentinel2
Images

ML model

Production
Dataset

F	C	I	I
F	C	P	P
F	H	S	S
F	H	S	S

Land usage Labeled grid
(F: Forest, C:Crop, S:
Sea, I: Industry, etc..)

f(x)

Create scores
for each land
grid item to
recommend

Website

Location
Info

User
Dashborad

API

Fetch
climate
information
for location

How it works?

Market

AGRICULTURE

5% of the Global GDP

The agriculture sector accounts for 5% of the global GDP while providing jobs for 27% of the global population. Since both food and textile sectors depend on agriculture it can be considered among one of the most important markets

Target Users

FARMER/LANDOWNER

Highest user numer by %

Parties who already have some experience in agriculture and want to improve their revenues in a more sustainable way

LAND INVESTORS

Medium user number by %

Parties who are looking to buy lands as an investment tool

GOVERNMENTS

Lowest user number by %

Governments who are looking into allocating some of their lands for agricultural usage

Business Model

AGRICULTURAL PLANNER

Land Classification

REVENUE

Users would be charged per request they make to our system

Crop Suggestion

REVENUE

Users would be charged per request they make to our system

Marketplace

REVENUE

Marketplace tax would be collected from each sale completed in our marketplace

Terramera

OUR ADVANTAGE

Terramera only focuses on improving the soil quality

Biome Makers

OUR ADVANTAGE

Biome Makers focus on physically analyzing the soil and give farmers recommendations accordingly. They require manual labor

Motorleaf

OUR ADVANTAGE

Motorleaf specializes in indoor farms, thus their reach would be smaller

Competition

Next Steps

-> Marketplace setup

-> Incorporation of more expert knowledge

-> Adding more data sources for better model suggestions

-> Marketing and UI/UX refinements

**CURRENT MODEL
ACCURACY %99.2**

PRODUCT DEMO

The Business Model Canvas

Designed for: TUM.ai Makeathon

Designed by: KuAI Team

On: Day 23 Month 04 Year 2022

Iteration: 7

Key Partners

Data required for our business:

- Satalite images
- Climate information
- Spectrum map corresponding to the satalite images
- Soil information
- Expert knowledge on bio diversity

Our business can partner with any company that can reliably supply us with all or some part of the above-mentioned data.

Some eligible companies who can provide this information:

Google, Yahoo, European Space Agency

Partners are tasked with providing us with reliable information on the above mentioned fields

For our marketplace feature, we will need agricultural equipment sellers (seeds, manure, …). Partners for this feature are tasked with providing necessary goods to the end-users (to the users who buy their equipment from the marketplace)

Key Activities

Suggestion creation by our AI model

Marketplace maintenance and partner hiring

Key Resources

Data required for our business:

- Satalite images
- Climate information
- Spectrum map corresponding to the satalite images
- Soil information
- Expert knowledge on bio diversity

Physical Resources:

- Customer relations division
- Servers to run our application

Value Propositions

Our business can provide 4 different values:

1. It will be able to make suggestions to optimize agricultural area usage via Regenerative Agriculture techniques and optimal crop suggestions. This would increase both long and short term revenue people are getting from the given area

2. It will be able to help governments to optimize the land usage of their countries by pointing out areas that have a high agricultural potential. This would improve the agricultural revenue of the given government as well as help them create more sustainable cities

3. Our platform also can be used as a marketplace where people can buy agricultural equipment (seeds, manure, …) with ease

4. It would also help investors who are looking to buy land as an investment by providing them with information about the potential of the given land piece

Customer Relationships

For Type 1 & Type 3 customers we will have to maintain a 24/7 live chat line (which will utilize chatbots in order to minimize the number of people we need to hire for this task) as well as an e-mail helpline

For Type 2 customers we can dedicate a contact person which would take and answer all of their questions. Since the number of potential type 2 customers is limited, the cost impact of this might be mitigated

Channels

Our business will be accessible as a web application.

We will be utilizing the web and social media ads to advertise our system.

Customer Segments

We can divide our customers into two main groups:

1. Farmers/Landowners
2. Governments
3. Land Investors

While most of our revenues will be coming from Type 1 & Type 3 customers, they are low-maintenance customers. Thus we can classify Type 2 customers as priority customers which would require special attention.

Cost Structure

1. Salary for our customer relations division (fixed)
2. Data we fetch from our partners (range)
3. Bills for our servers and internet usage (range)

While the upfront cost of (1) would be the highest, (2) and (3) has the potential to surpass this depending on the popularity of our application

Revenue Streams

Per prediction/suggestion of our model
Per items sold at the marketplace

Notes: