

CHALLENGE C

AI-Software Hackathon
Team Bang

OBJECTIVES

Develop an agricultural data marketplace:

Goal: Enable easy discovery and trading of agricultural data.

Features:

- Showcase and sell data packages.
- Leverage standardized metadata for enhanced usability and discoverability.

MOTIVATION

Why an Agricultural Data Marketplace?

- Data spaces foster efficient sharing and utilization.
- Agriculture lags behind other sectors in adopting data spaces.

Challenges:

- Poorly described metadata.
- Limited discoverability and utility of data.

=> A marketplace using standardized metadata (Dublin Core, DCAT)

TASKS

1. Marketplace Development:

- Design and implement a platform for data trading.

2. Metadata Creation and Enrichment:

- Use AI to standardize metadata (with Dublin Core, DCAT).

3. Specialized Terminology:

- Incorporate Agrovoc vocabulary for agricultural context.

4. Utilize Test Data:

- Example datasets: Drone data, soil sample results.

TECHNOLOGY

Back-end: Python

Front-end: React

API: Open AI API for analysing data and generating metadata

Integration of Agrovoc Vocabulary for agricultural-specific terminology

SOLUTION USING AI

AI processes data and generates metadata files for data packages, which are saved into a database. Users can upload and search for data packages on the website using tags.

Metadata standardization example:
transformation of drone data using Dublin Core and Agrovoc.

```
[
  {
    "contributor": "User123",
    "coverage": "Finland",
    "creator": "PhotographerA",
    "date": "2023-06-15T12:30:00Z",
    "description": "Aerial view of the landscape.",
    "format": "image/jpeg",
    "identifier": "DJI_0470.JPG",
    "language": "en",
    "publisher": "DJI Inc.",
    "relation": "Related to aerial photography projects.",
    "rights": "Copyright © 2023 PhotographerA",
    "source": "DJI FC6360 Camera",
    "subject": "Aerial Photography",
    "title": "DJI 0470",
    "type": "Image"
  },
  {
```

Example of how AI generates metadata

FUTURE DEVELOPMENTS

Data presentation

Considering what should be displayed in the marketplace for sellers and buyers.

Trading capabilities

Sellers can upload information about their package, set tags and price. Users can search for packages with filters and make payment.

Agrovoc vocabulary

Using Agrovoc to support specialized agricultural terminology

Due to the limitation of time, we could not manage to create a complete marketplace platform. These are some considerations for future developments (if we have more time)

Thank you.