Smart Agriculture

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Introduction

- Technological innovations have greatly shaped agriculture throughout time. From the creation of the plow to the global positioning system (GPS) driven precision farming equipment, humans have developed new ways to make farming more efficient and grow more food. We are constantly working to find new ways to irrigate crops or breed more disease resistant varieties. These iterations are key to feeding the ever-expanding global population with the decreasing freshwater supply.

- Our project will also help farmers by providing agriculture related information through mobile application.

Novelty of the project

- Our project is novel as it gives real-time data to farmers based on local data which has never been done before.

How the project will work:

FIRST SENSORS ON THE FIELD WILL COLLECT REAL TIME DATA

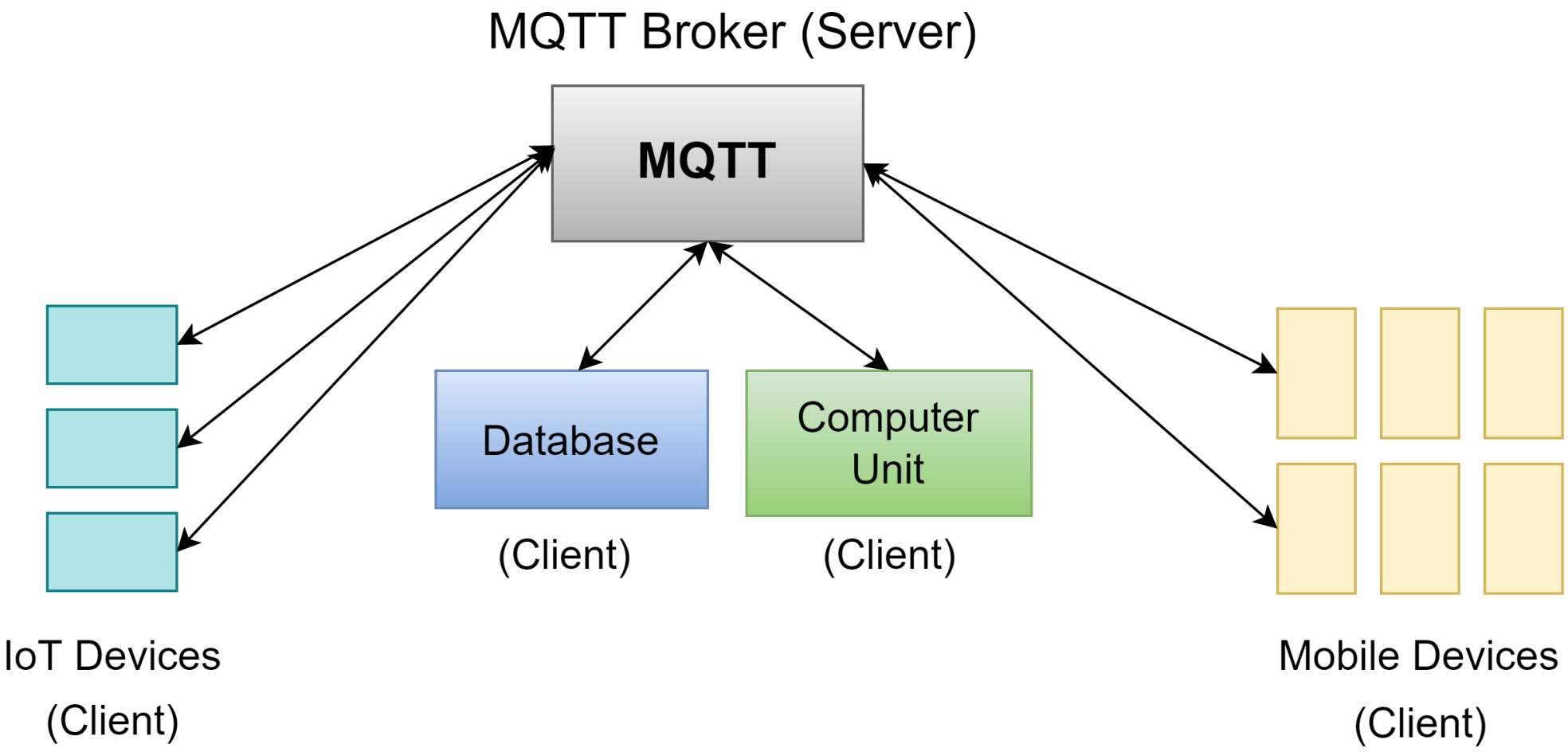
THE COLLECTED DATA IS SENT FOR CLOUD COMPUTING

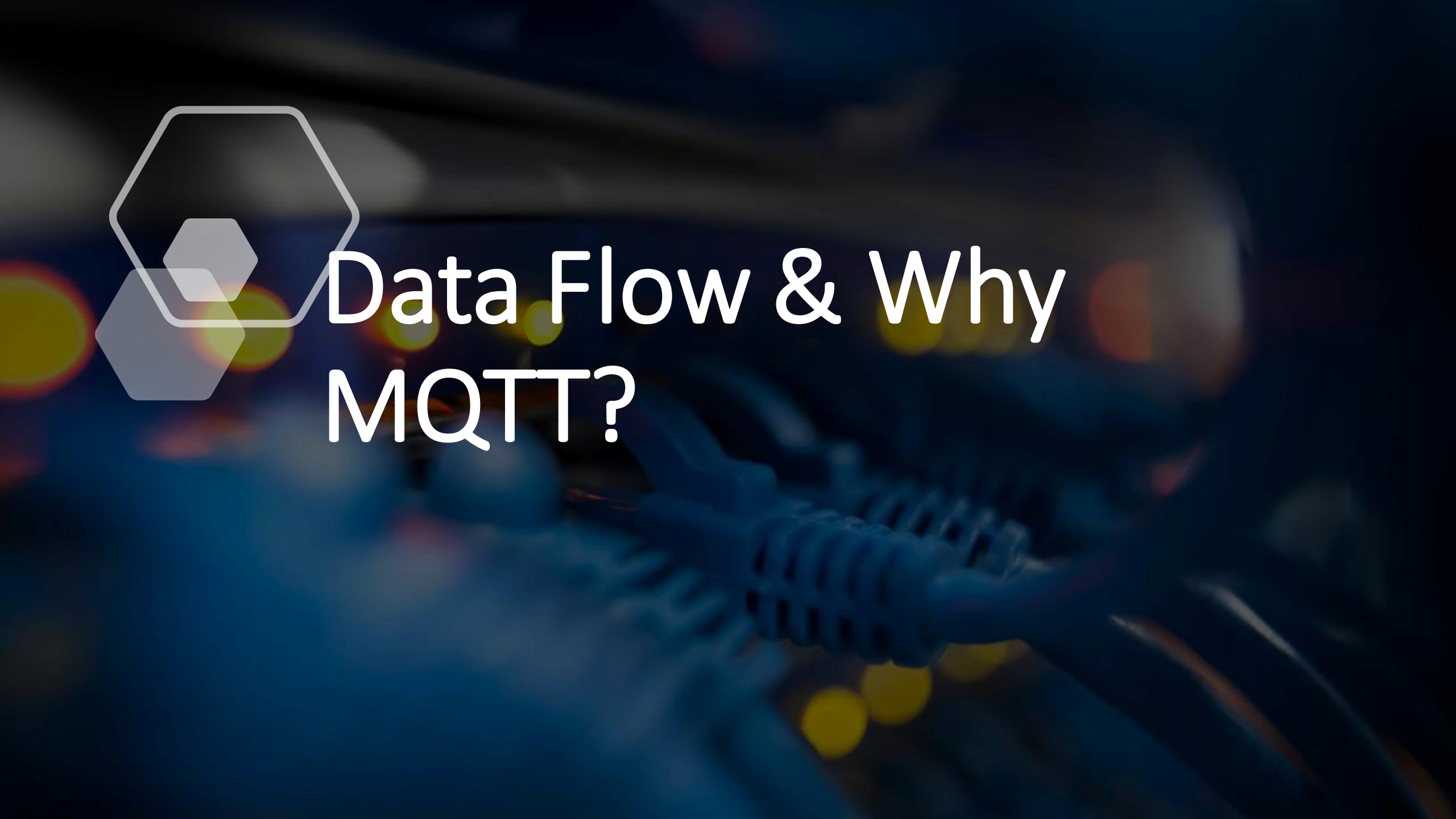
The data will be then processed and refined using machine learning which will also provide certain predictions regarding which crop is best suited for the soil, what will be the avg produce

This data is sent to mobile application to through API

Finally, the end user will see this information taken from API in the mobile application

Data Flow Lifecycle





Data Flow & Why MQTT?

We've chosen MQTT (Message Queueing Telemetry Transport) as our preferred transport protocol.

It is a lightweight protocol, that is mainly focused on real-time data transfer from IoT devices.

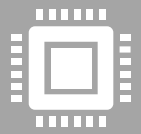
Network outages handling, data retention/buffering and authentication all is handled by the MQTT Broker, making it lightweight at the client side and a good fit for use with the embedded devices.

It is easy to track down which element is down in the supply chain.

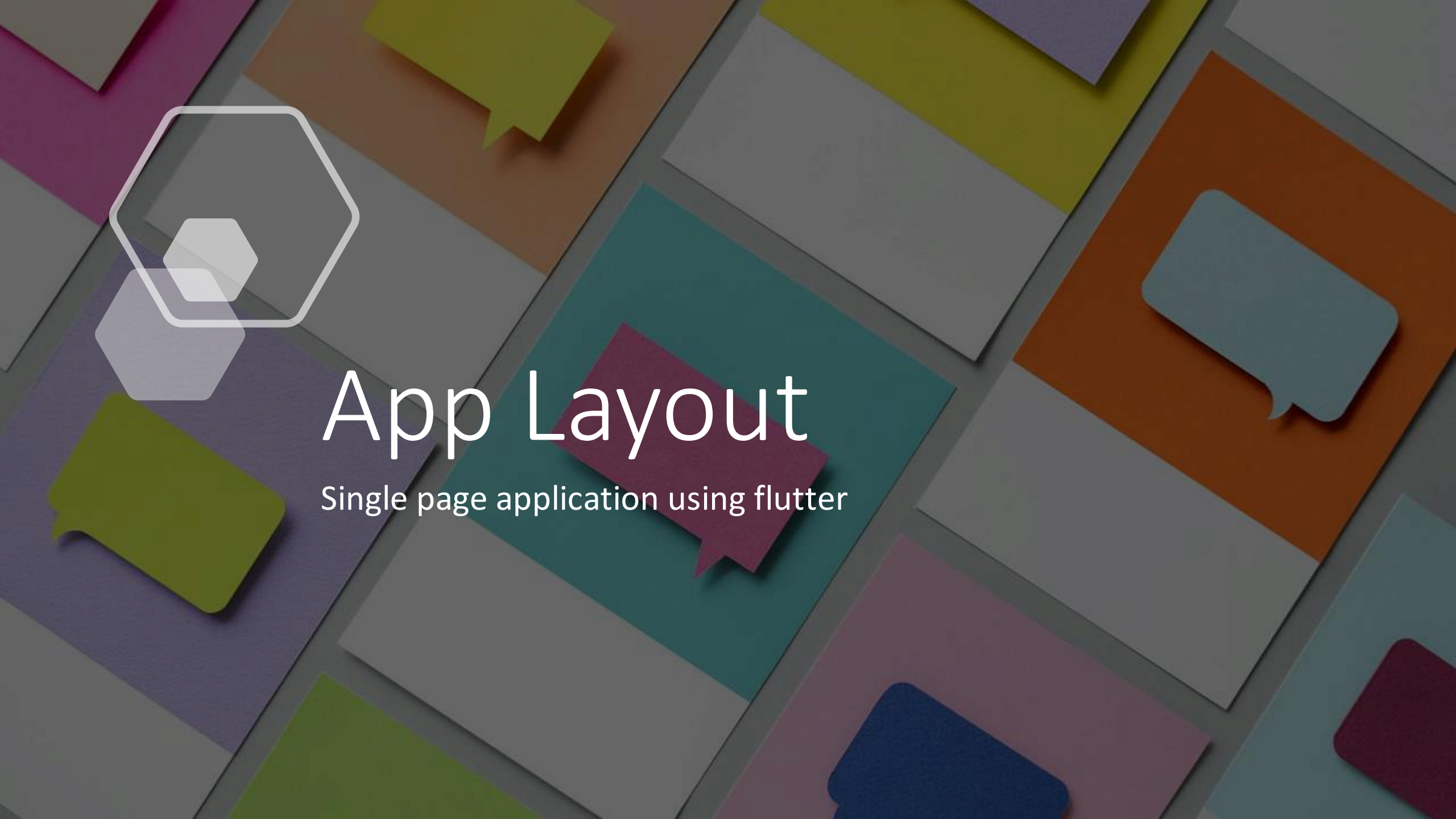
Asynchronous data transfer (fast and slow sensors have no problem providing their latest real-time data).

Everyone (both sender & receiver) being a client, it's easy to integrate the protocol over variety of devices.

Supports 2-way data transfer, easy to push raw data and pull results from the compute unit, and same for the database.



Embedded devices need not to send the data multiple times to compute unit, mobile devices, and to database, drastically reducing the network bandwidth.

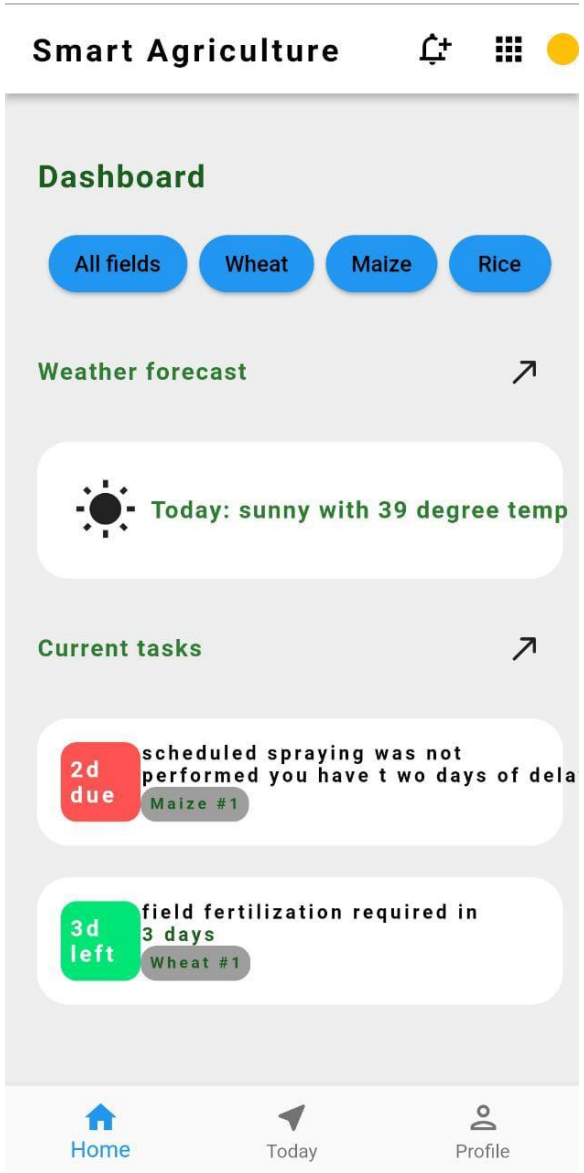


App Layout

Single page application using flutter

Main Components:

- AppBar
- FontAwesome Icons
- ToolTips
- Container
- Bottom Navigation Bar
- Login page using G-mail I'd


Smart Agriculture
Dashboard
All fields
Wheat
Maize
Rice
Weather forecast
Today: sunny with 39 degree temp
Current tasks
2d due
scheduled spraying was not performed you have t wo days of dela
Maize #1
3d left
field fertilization required in 3 days
Wheat #1
Home
Today
Profile


स्मार्ट ऐग्रकल्चर
डैशबोर्ड
सभी क्षेत्र
गेहूँ
मक्का
चावल
मौसम पूर्वानुमान
आज: धूप के साथ 39 डिग्री तापमान
वर्तमान कार्य
2d due
अनुसूचित छिड़काव नहीं किया गया था
आपके पास दो दिन की देरी है
मक्का #1
3d left
3 दिनों में खेत में खाद डालना जरूरी
गेहूँ #1
Home
Today
Profile

Future work plan

We are waiting for the real time data to roll out fully-furnished application.

Thank You