IoT-driven system for transparency and traceability of organic food supply chain

Domain: Smart Crops Monitoring System

Connect Tech 2.0

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Introduction

Problem Statement:

Our solution aims to build a IoT-Enabled Crop Monitoring system for transparency and traceability of the yields in the organic food supply chain

MOTIVATION

- Agriculture provides large economic opportunities along with the yield of food and other raw materials in our life.

- Due to the increasing health and environmental hazards caused by chemical fertilizers and pesticides, organic farming is potentially the best way to overcome this.

- This technology will enable consumers to have direct access to untampered data to monitor the quality of the products they consume.

PROPOSED SOLUTION

Implementation method:

- Capturing real-time environmental data from organic farm or field
- Data is uploaded onto the firebase for access of real time data which is reflected on the mobile application
- This could help the farmers monitor the crop growth and give assurance to the consumers about the quality of the products they consume
- Easy traceability in case of a damaged batch of crops

Usage of IOT technology

- The advancement in modern agriculture technology also helps in the maintenance of climate change by using different devices.

- Different sensor devices are deployed in the field to gather useful data like temperature, light, mugginess, acidity, and soil dampness, etc. as the right data is basic to make the legitimate move during development.

- Usage of mobile application as a medium for data display for easy outreach to all users.

Technologies that will be used to build this project

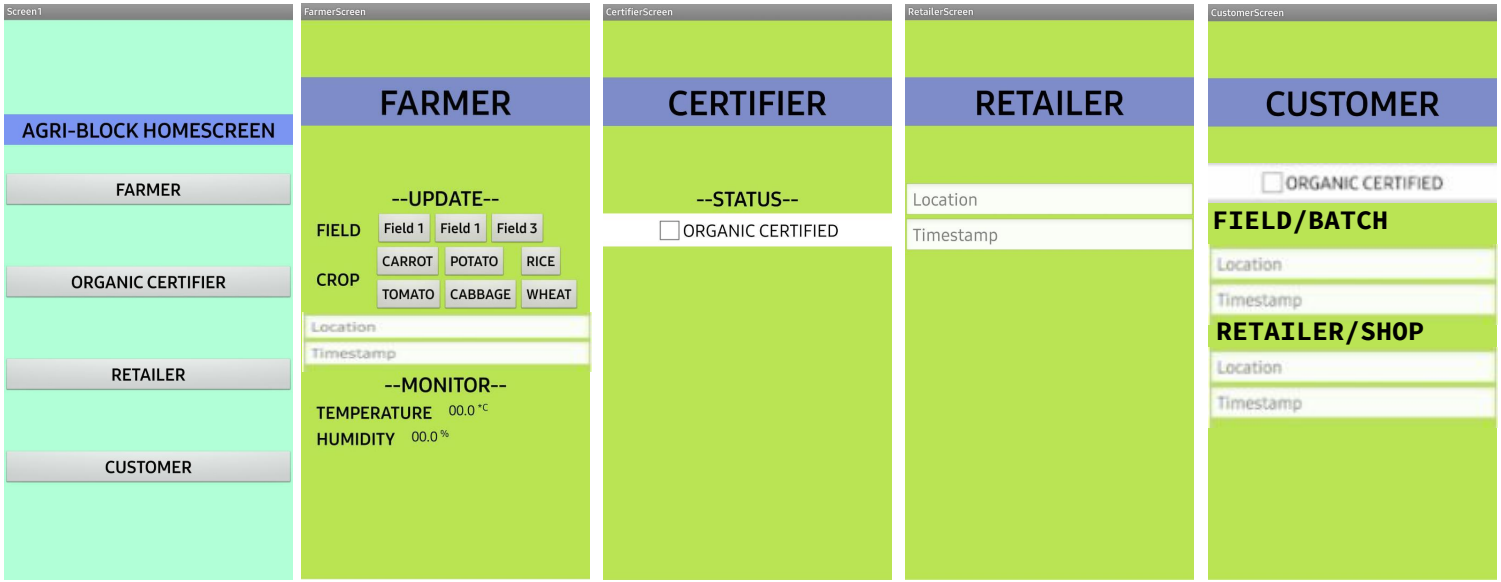
Softwares/services/technologies:

- Arduino IDE
- MIT App Inventor
- Google Firebase

Hardware/services/technologies:

- NodeMCU ESP8266 Module
- Temperature & Humidity Sensor
- Moisture Sensor (future scope)
- Acidity Sensor (future scope)

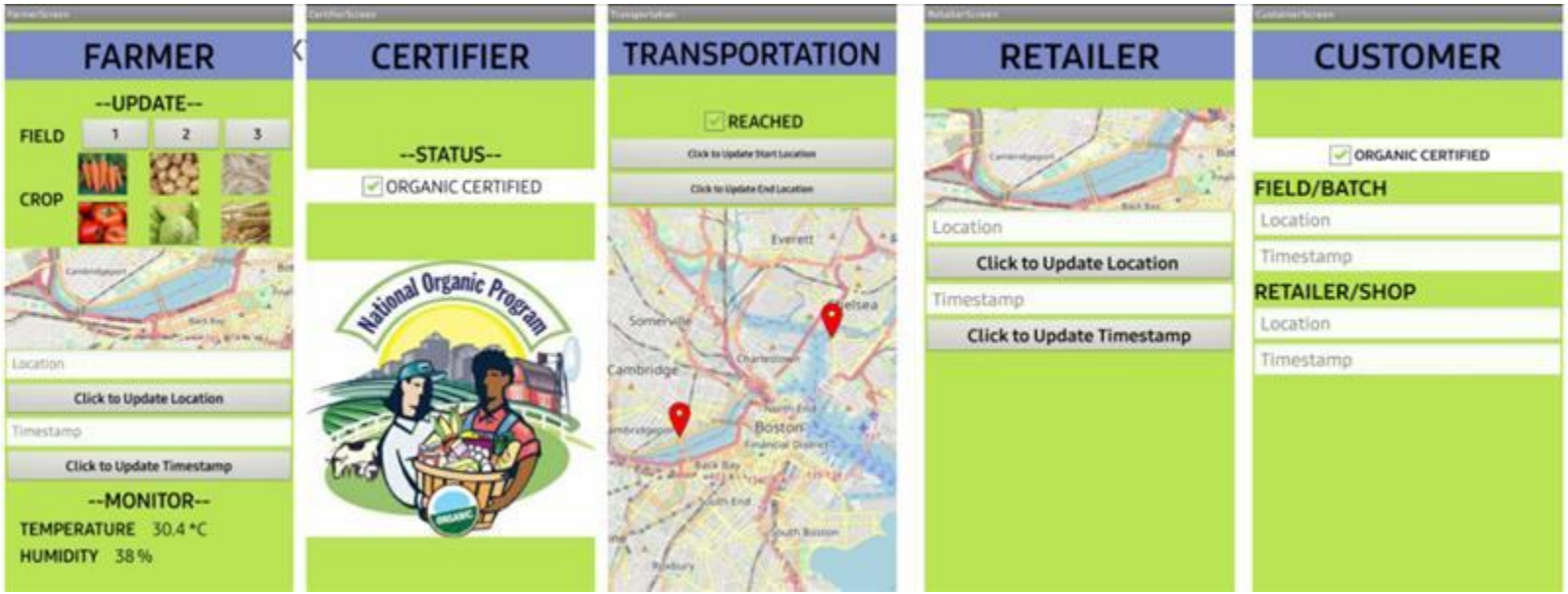
Prototype of project



Suggestions provided

- Addition of transportation as it is an essential part of the food supply chain.
- Farmer page made more user friendly with just button updation and hence reducing the interaction via typing.
- Use of images so as to aid to all users and to cross the language barrier.

PROTOTYPE OF PROJECT (UPDATED AFTER SUGGESTION)



Feasibility of the project

Economical feasibility:

- Cheap and affordable hardware
- Software implementation is easy to develop

Technical feasibility:

- Easy to use and simplified interface for everyone
- Usage of mobile application for viewing real time data

Operational feasibility:

- Easy implementation & setup of device in fields
- Mobile application usage for maximum outreach to all users

RESOURCES REQUIRED

Resources required by developers:

- Arduino IDE
- MIT App Inventor
- Google Firebase
- NodeMCU ESP8266 Module
- Temperature & Humidity Sensor
- Moisture Sensor (future scope)
- Acidity Sensor (future scope)

Resources required by users:

- Mobile Phone
- Internet Connectivity
- Agri-Block Device/Module (the product)

Market Strategy

Far sight plan/Future Scope:

- Production and usage of this product at a larger scale
- Using IOT driven-blockchain technology for the database security
- Incorporating more sensors(with more precision) for wider monitoring

Target Customers: Organic Food Supply brands linked to the Supply Chain

Source of income: Initial prices would be fair and moderate and it would be a one time investment for the components included in the hardware device (agri-block setup - the product) which is the production and setup cost


Thank you :)