

Smart Farming using Blockchain Technology

Group 12

Project ID 2

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Introduction:

E-Agriculture, or Smart Farming, refers to the design, development, and application of innovative methods to use modern information and communication technologies (ICTs), such as the Internet of Things (IoT) and machine learning, to move towards more sustainable agricultural and farming practices.

Recap

Papers:

1. Blockchain and smart contract for IoT enabled smart agriculture
2. Innovative blockchain-based farming marketplace and smart contract performance evaluation
3. Blockchain and IoT based Food Traceability for Smart Agriculture

Motivation:

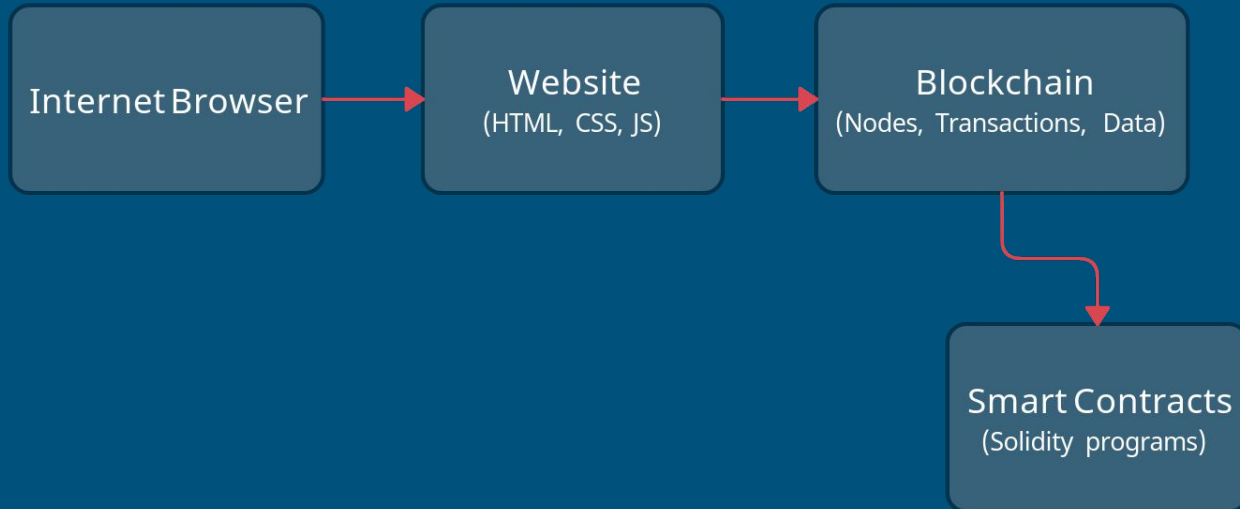
1. Raising the initial investment for setting up the field is very difficult for the farmers due to high interest rates of the banks.
2. Farmers unable to fetch reasonable prices due to the intervention of the middlemen in the market.
3. Inefficient supply chain handling and issues in the storage and transportation.

Features:

- Farmers can register their product details in the marketplace.
- Quality assurance is done by the authorised parties.
- MRP is decided by the quality assurance team as well.
- Then a lot will be allotted based on the amount of product farmer is willing to sell.
- Consumer can pay the amount and he can buy the product after verifying the details provided in the blockchain.

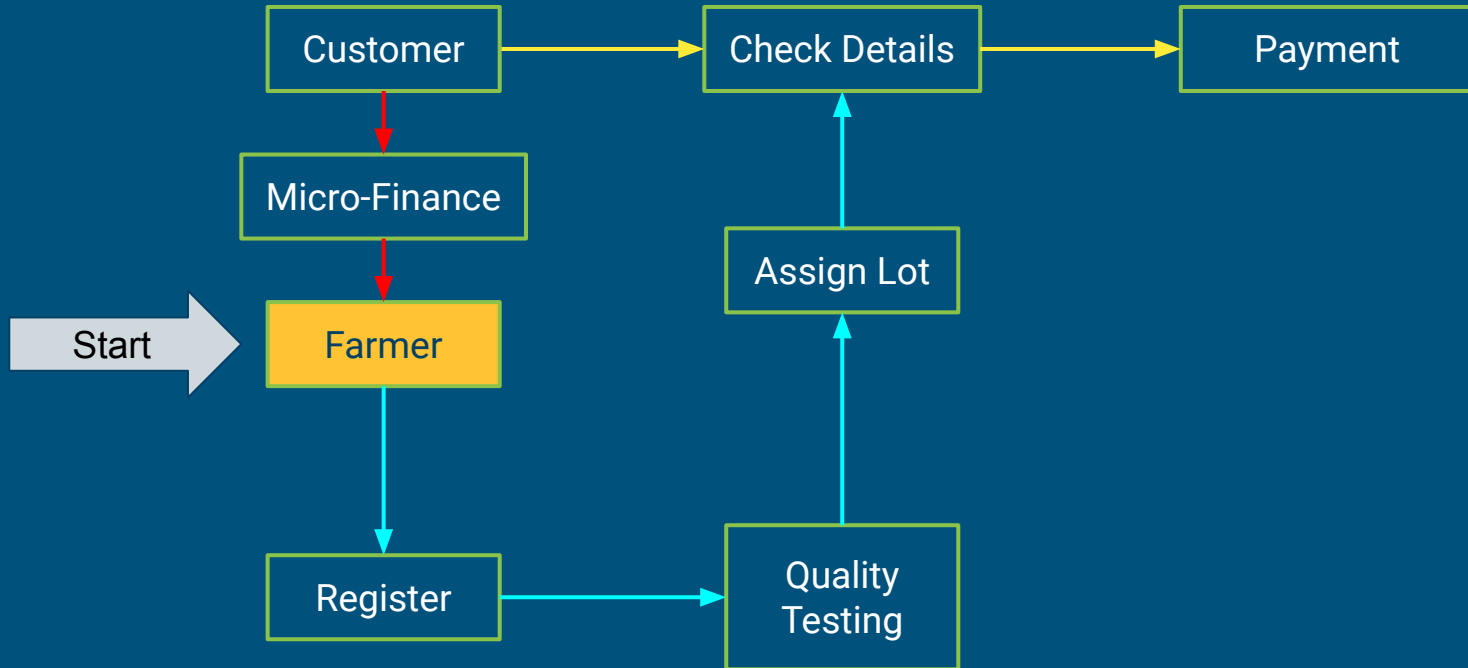
WorkFlow:

Blockchain is used to safely store this monitored data while a Smart Contract will be used to automate the process, trigger events, and set the necessary implementation of terms and conditions for all the parties.



Time for Demo

Architecture



Tech Stack

- HTML, CSS, JavaScript
- Solidity
- Ganache
- Truffle
- Web3.js
- npm

Smart Contract

contract StructStorage:

mapping balances, farmers, products

function fundaddr(addr) // sets customer balance to Rs.5000

function sendCoin(receiver, amt, sender) // send Rs. amt from sender to receiver

function getBalance(addr)

function addFarmer(farmer details)

function addProduct(product details)

function getFarmer(farmer ID)

function getProduct(product ID)

Improvements

- Authority for Validation
- New CryptoCoin based on Ethereum
- Notification system
- Separation of the Farmer, Quality Testing, Customer, Micro-Finance modules
- Database to store information of the Farmers, Customers and Produce
- OTP based Login facility for all parties involved
- IoT devices to help in Quality Testing

Thank You

