**Application Design Document**

## Overview:

Based on the market demands, the co-operative will be able to float tenders for the required products with the desired quantity and quality. Co-operatives can finalize a base price using AI/ML algorithms which would use current demands, previous trends etc.

All the farmers registered in the system for that product will be notified through SMS. They can respond back with the quality, quantity and an offer price.

On the day of tender opening, the co-operatives can review and approve the bids. Farmers will be informed about the results via SMS.

## Process Road Map:

Diagram, schematic

Description automatically generated

## Cooperative releases a new tender

From the **digital co-operative management system app UI** Co-operative will

1. Click on Create Tender.
2. Fill the form - Product, Quality Grade, Quantity, Base Price
3. Submits the tender.
4. Data will be uploaded to tender table in the RDBMS database and a tender will be generated.
5. Push Notifications will be trigger to the Farmers who are register for that product.

## Farmers bids for tenders and sent to Co-operative:

1. From their Mobile phones the farmers will send a SMS with the tender id, product code, quantity grade, quality and offer price.
2. The messages will be redirected to the Twilio Programmable Messaging service.
3. The Twilio Programmable Messaging service will forward the message to the Node-RED app hosted on IBM Cloud.
4. Node-RED app will upload the bid details to the RDBMS database.
5. IBM Cloud Object Storage Cloudant database is provisioned to receive the images and/or message data.
6. The market demands, historical market trends are fed into the IBM Cloud Object Storage on a periodic basis using a batch process.
7. The IBM Cloud Pak for Data AI/ML service does the necessary computations and returns a response to the Node-Red app.
8. The Node-RED app processes the response, converts it to a user-readable format, and forwards it to the **digital co-operative management system app UI**.
9. The response is received by the digital co-operative management system app UI.
10. The co-op admin can view the response via the digital co-operative management system app UI. By using IBM Cloud function co-op admin can access old history of tender/ Farmer based on the successful deliverables and reviews.
11. The Twilio Messaging service forwards the response as a reply message to the User through their messaging APIs.
12. The user receives the reply message as a response from the IBM Cloud Pak for Data AI/ML service through their non-smartphone device MMS/SMS service.

**Co-Operative approves the bid:**

1. Co-operative will open the digital co-operative management system app UI and will Approve the suitable Bid.
2. The Approved details get saved to RDMS system.
3. A Push Notification is sent to the Farmers with the Approval details.