# Digital Credit Passport for Farmers (DCP)

## Problem Statement

Farmers struggle to get fair and quick credit approvals due to lack of proper financial records and trust from banks.

## Proposed Solution

A Digital Credit Passport app records farmers crop data, income, and loan history using blockchain, giving them a verified digital credit profile to easily access loans from banks or fintech companies.

## Key features:

Data Aggregation:

Collects data from multiple sources — crop yield records, digital payments, mandi (market) transactions, and government subsidies.

Credit Scoring Engine:

Uses AI/ML to generate a Farmer Credit Score based on income stability, repayment history, and farm performance.

Blockchain-based Record Storage:

Ensures data transparency and tamper-proof credit history for both farmers and banks.

Mobile App for Farmers:

Farmers can view their credit profile, apply for loans digitally, and receive instant approval updates.

Integration with Banks and NBFCs:

Provides verified data to lending institutions, reducing approval time and improving trust.

## Technologies / Stack Used

| Layer | Technologies |
|---|---|
| Frontend | React.js / Flutter(UI for farmers & banks) |
| Backend | Node.js / Django(Core app logic & APIs) |
| AI/ML | Python + scikit-learn(Credit score prediction) |
| Database | PostgreSQL / MongoDB(Data storage) |
| Blockchain | Hyperledger / Ethereum(Secure credit records) |
| Cloud | AWS / GCP(Hosting & deployment) |
| Security | JWT / OAuth 2.0(Authentication) |
| **Analytics** | Power BI / Grafana(Monitoring & insights) |

## Expected Outcome

- Farmers get a digital financial identity to easily access loans without heavy paperwork.
- AI-based credit scoring enables fast and fair loan approvals.
- Blockchain ensures transparency and prevents data tampering.
- Promotes financial inclusion for small and marginal farmers.
- Builds trust between banks and farmers, reducing delays and fraud.
- Supports rural economic growth through data-driven credit access.

## Unique Value Proposition (UVP)

| Aspect | Powerfolio Advantage |
|---|---|
| **Trust & Verification** | Uses blockchain technology to make farmer credit history tamper-proof and verifiable. |
| **Visibility** | Gives farmers a recognized digital financial identity, visible to banks, NBFCs, and government agencies for credit evaluation. |
| **Credibility Boost** | Builds farmer reputation and reliability over time through consistent, data-backed performance records. |
| **Data Security** | Ensures secure data storage with encryption and access control for farmers and banks. |
| **Efficiencyrtt6676667** | Reduces loan approval time from weeks to hours, cutting manual paperwork and errors. |

## Defining MVP (Minimum Viable Product)

The MVP is the simplest functional version of the Digital Credit Passport that demonstrates its core value: helping farmers access fair and fast credit using verified digital records. It focuses on essential features needed to validate the idea with real users (farmers and banks) before scaling.

**Core Features of the MVP**

| Feature | Purpose / Functionality |
|---|---|
| Farmer Registration | Farmers can create a digital profile with basic details (name, ID, land info). |
| Document Upload | Upload essential documents (land proof, ID, past loan records). |
| Credit Score Generation | Basic AI/ML model analyzes farmer's data to generate a preliminary credit score. |
| Loan Application | Farmers can apply for loans digitally using their credit profile. |

| | |
|---|---|
| Bank Dashboard | Banks can view farmer profiles and approve/reject loans based on credit score. |
| Basic Data Security | Store farmer data securely with encryption and access control. |

**MVP Goals**

Validate core idea: Do farmers benefit from a digital credit passport?

Test AI credit scoring with real data.

Assess adoption by farmers and banks.

Collect feedback for additional features like blockchain integration, predictive insights, and multilingual AI assistance.

## Workflow Overview

1. Farmer Registration:

- Farmer creates a digital profile with personal, farm, and land details.

2. Document Upload & Verification:

- Uploads ID, land proofs, and past loan records.
- System verifies data with government records and AI validation.

3. Credit Score Generation:

- AI analyzes income, crop yield, repayment history, and market trends.
- Generates a preliminary credit score.

4. Digital Credit Passport Creation

- Verified profile and credit score stored securely.

- Blockchain records provide tamper-proof history.

5. Loan Application

- Farmer selects loan type and amount.
- System suggests best-fit loans based on credit score.

6. Bank / NBFC Review

- Bank dashboard allows review of credit profile and documents.
- Approve, reject, or request additional info.

7. Loan Disbursement

- Approved loan is transferred to the farmer’s account.
- Transaction recorded on blockchain for transparency.

8. Post-Loan Monitoring:

- Track repayments and update credit score+.
- AI predicts risks and sends alerts for defaults or delays.

9. Continuous Learning & Updates

- AI improves over time using new data.
- Farmers Digital Credit Passports stay updated, boosting trust and credibility.

**ONE LINE PITCH**

"Digital Credit Passport for Farmers (DCP) is a platform that gives farmers a verified digital financial profile. Using AI, it generates fair credit scores based on farm income, crop yield, and repayment history. This helps farmers get loans quickly and transparently, while building trust with banks."

# Software Requirement Specification (SRS)

**Project:** Digital Credit Passport for Farmers

**Domain:** Agricultural FinTech
**Host:** Powerfolio.in

**Prepared for:** GradXpert / Powerfolio Team
Version: 1.0
**Date:** October 2025

## 1. Introduction

Digital Credit Passport for Farmers (DCP) is an AI-powered platform that provides farmers with a verified digital financial identity. It helps farmers access loans quickly and fairly by generating credit scores based on income, crop yield, and repayment history.

## 2. System Overview

The system collects farmer data, verifies documents, generates a credit score using AI, stores records securely, and enables digital loan applications. Blockchain ensures transparency and tamper-proof credit history.

## 3. Functional Requirements

- Register farmers with Aadhaar
- Link bank accounts and loan history

- Track subsidies and repayment
- Generate credit score and credit passport
- Lenders can view and verify data

## 4. Non-Functional Requirements

- Performance: Fast data retrieval (<2 seconds)
- Security: Data encryption, secure authentication
- Scalability: Support millions of farmers
- Usability: Mobile-friendly, multilingual interface

## 5. User Roles

| Role | Description | Permissions |
|---|---|---|
| **Admin** | System administrator managing platform operations. | Manage users, monitor activities, maintain data security, update system settings. |
| Framer | A registered user who owns farmland and seeks credit. | Create profile, upload documents, view credit score, apply for loans. |
| Bank/NBFC | Financial institution reviewing loan applications. | Access farmer profiles, verify credit score, approve/reject loans. |

## 6. Constraints

| Type | Description |
|---|---|
| **Technical** | Must be compatible with all modern browsers (Chrome, Edge, Firefox, Safari). |
| **Network** | Requires stable internet connectivity for cloud-hosted database and media. |
| **Security** | Sensitive user data must comply with data protection policies (GDPR/India DPDP Act). |

| | |
|---|---|
| **Hosting** | Deployment restricted to Vercel (frontend) and AWS/Render (backend). |
| **Integration** | AI chatbot dependent on third-party API (OpenAI or Llama). |
| **Scalability** | Initial phase supports up to 100 colleges and 5,000 projects; later phases will scale further. |

# 7. Future Enhancements

- Recruiter Portal with student reach-outs.
- College Innovation Analytics Dashboard.
- AI-driven project review & ranking.
- Blockchain-based project authenticity validation.