

SARURA OS — Product Requirements Document

For: Afri-Farmers Market Ltd (Kigali, Rwanda)
Solves: 01-problem-statement.md
Scope: Whole system, greenfield
Stack: USSD native + PWA Portal + WhatsApp Business + Web Admin
Date: 2026-09-09 **Status:** v1 draft

Note: "cooperative" is used in full throughout this document.

1. Solution summary

Build a pre-order layer for Afri-Farmers that books the HORECA buyer **before** harvest, so the cooperative harvests only what is already sold and the produce moves Bugesera/Rulindo → Nyabugogo → Kigali in hours instead of days.

- HORECA orders by 4pm Day -1 (PWA Portal, or WhatsApp message fallback).
- The system groups orders into one pick list per cooperative.
- The cooperative confirms harvest via USSD on Day 0 morning.
- Afri-Farmers operations sorts at Nyabugogo and dispatches moto tours by 11am.
- Every sale carries a MoMo record and an EBM invoice reference (mock in v1), and respects the cooperative settlement window (buyer → cooperative ≤ 30 days, cooperative → member ≤ 15 days).

2. Users

User	Device	Language	Access
Farmer (cooperative member)	Feature phone, 2G	Kinyarwanda	USSD *384* only
HORECA buyer	Smartphone	Kin / Eng / Fr	PWA Portal + WhatsApp
Afri-Farmers operations	Desktop	English	Web Admin
Field agent	Smartphone	Kin / Eng	PWA mobile view of Admin

No homeless accounts: every farmer belongs to a cooperative; every HORECA buyer is registered with TIN for EBM.

3. Artifacts to build

3.1 Farmer — USSD native (Africa's Talking)

*384*7# → Murakaza neza SARURA
1. Tangaza umusaruro (list harvest)
2. Reba igiciro (see price)

3. Reba amafaranga (my payments)
0. Fasha (help)

- **F1 List harvest:** cooperative (preset by SIM) → crop (tomato / onion / potato) → grade (A / B) → kg → confirm. Writes to `harvests`, status `listed`. SMS confirmation.
- **F2 See price:** tomorrow's committed price per crop/grade.
- **F3 My payments:** last 3 settlements with dates.
- **Constraints:** ≤ 90 seconds, ≤ 6 steps, numeric input only, no data balance needed.

3.2 HORECA — PWA Portal + WhatsApp Business

PWA Portal — catalog with photo/grade/price/available kg and 4pm cutoff timer; cart + checkout with delivery slot and MoMo; history + EBM invoices + one-tap reorder; offline catalog cache with queued cart sync; Kin default, Eng/Fr toggle.

WhatsApp Business (Cloud API): daily 3pm alert template with [Order via WhatsApp] and [Open Portal]; reply `1` creates an order identical to PWA checkout (source `whatsapp`); status webhooks for confirmed / dispatched / delivered. Both write to the same `orders` table with duplicate merge guard.

3.3 Admin — Web Admin

- **A1 Batch board:** demand vs listed per crop/grade, pick list per cooperative, SMS push.
- **A2 Harvest confirm:** leader confirms kg + field photo. Status `listed` → `confirmed` → `received`.
- **A3 Nyabugogo sort board:** weigh-in, split per order, >5% shortfall auto-notify.
- **A4 Manifests:** trunk leg + last-mile moto tour with route order and phones.
- **A5 Money:** MoMo records, mock EBM ref (`EBM-YYYY-XXXX`), 30/15-day settlement tracker.
- **A6 Loss tracker:** weigh-in vs weigh-out, loss % per lane per day. Roles: ops / field / viewer.

4. Data model (v1)

- `cooperatives` — id, name, district, leader phone, by-law ref, approval date
- `farmers` — id, cooperative_id, name, phone, language
- `harvests` — id, farmer_id, cooperative_id, crop, grade, kg_listed, kg_confirmed, status
- `buyers` — id, business name, type, phone, TIN, address, language
- `orders` — id, buyer_id, crop, grade, kg, price, source, status, delivery date/slot/address
- `batches` — id, delivery_date, crop, grade, kg_needed, kg_listed, status
- `manifests` — id, batch_id, leg, vehicle, driver phone, stops, kg
- `payments` — id, order_id, amount, momo_ref, ebm_ref, paid_at, settlement_due
- `losses` — id, batch_id, kg_in, kg_out, loss_pct, recorded_by

5. Key flows

Flow 1 — Pre-order (Day -1): 3pm alert → order → ops confirms by 5pm → pick list 5:30pm.

Flow 2 — Harvest (Day 0): 6am SMS → harvest → USSD confirm → weigh + photo → manifest.

Flow 3 — Sort + deliver (7–11am): weigh-in → split → moto tour → MoMo + EBM ref → delivered.

Flow 4 — Settle: payment recorded → due dates computed → overdue flagged.

6. Non-functional requirements

- USSD < 4s/step; PWA first load < 3s on 3G; admin < 2s.
- PWA offline for catalog + cart; USSD with zero data.
- Kinyarwanda complete on USSD + WhatsApp; PWA/admin trilingual.
- RWF only; Africa/Kigali timestamps; audit log on every status change; daily backups; CSV export.

7. Out of scope (v1)

New trucks, cold rooms, farmer smartphone app, more than 3 crops, more than Bugesera/Rulindo lane, live RRA certificate (mock only), Rubavu long-haul, B2C delivery, credit scoring.

8. Acceptance criteria

1. Farmer lists 50kg via USSD in ≤ 6 steps with SMS confirmation.
2. Identical PWA and WhatsApp orders merge once in Admin.
3. One pick list for 20 orders sent to the cooperative.
4. Sort board splits 340kg across 20 orders with loss % shown.
5. Each delivered order shows MoMo ref + mock EBM ref.
6. Settlement tracker shows correct 30/15-day dates and flags overdue.
7. PWA cart works offline and syncs on reconnect.
8. All text readable in Kinyarwanda on USSD, WhatsApp, and PWA.