



EVERY APPLIANCE. ACCOUNTED FOR.

The immutable asset record and physical chain-of-custody engine for multifamily portfolios.

200+

UNITS PER PROPERTY

3

CONNECTED APPS

1

SHARED LEDGER

Where multifamily capital quietly dissolves.

TURNOVER SHRINKAGE

Equipment moves during make-ready turns or leaves with vendors. Without a physical chain of custody, the loss is absorbed as friction.

ORAL-TRADITION HISTORY

Whoever serviced the unit last year remembers what they did — if they still work there. Warranties and write-offs live in memory.

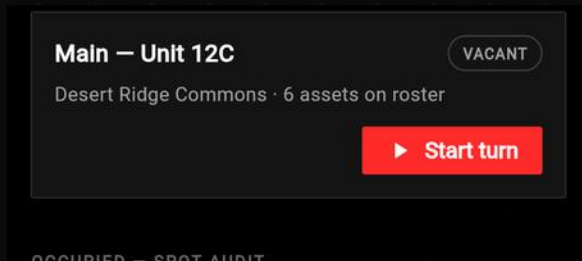
BLIND CAPEX

Aging clusters surface only as emergencies. CapEx is forced into reactive crisis spend, never planned replacement.

When the registry rots into fiction, operators make \$10,000 capital decisions on guesswork.

Capture in the field. Resolve in HQ.

FIELD APP



Sub-second scans, turn checklists, and service events — with zero signal in the basement.

RESIDENT PORTAL



Home, Report issue, Work orders. Ticket intake bound to the appliance NPID — no app install.

HQ CONSOLE



Portfolio health, CapEx forecasts, warranty claims, and dispatch — from one office.

The plate is the record.

	MANUFACTURER SERIALS	NAMEPLATE IDs (NPIDs)
READABILITY	Corroded, painted over, unreadable at arm's length.	Error-corrected QR. Scans at arm's length, in the dark.
UNIQUENESS	Formats overlap across brands. Not globally unique.	Crockford Base32. Mathematically guaranteed global uniqueness.
PRE-EXISTENCE	Cannot log it until found and transcribed.	Pre-allocated in-app. Minted before the serial is known.
SPEED	45 seconds of hunting, flashlight, and typing.	Sub-3-second scan. No typing, ever.

Serials are for intelligence (warranties, parts). NPIDs are for operations. We capture both — the ledger runs on NPIDs.

Engineered like the software: **consistency is a speed feature.**



- **THE PAYLOAD**
Error-corrected QR, Level H. Survives grime and scratches. Encodes a signed URL.
- **HUMAN-READABLE KEY**
Crockford Base32 NPID — no I, L, O, U — with a check digit that rejects typos instantly.
- **THE SUBSTRATE**
Tamper-destructible vinyl. Shreds on removal, leaving visible evidence. The theft deterrent.
- **THE ADHESIVE**
High-tack acrylic rated for heat, grease, and utility-closet temperature cycling.

Zero bars. Zero friction.

THE MIRROR

Local SQLite (Drift). Techs read and write here — the app never waits on network.



THE QUEUE

Append-only outbox. Every mutation carries op ID, timestamp, and idempotency key.



THE ENGINE

Background sync worker. Pushes batches with backoff the moment signal returns.



THE TRUTH

Postgres system of record. Monotonic sequences reconcile every change exactly once.

A tech logs 11 service events and 40 photos with zero signal in a basement laundry room. Walking into the parking lot, everything lands correctly. The app never blocks to arbitrate state.

ASSET · NP-7K2M4QX9



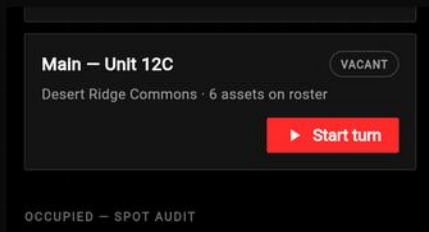
`asset_location` rule enforcement:

- one open location per asset
- no chronological gaps
- no overlapping timestamps

Strictly append-only. Location changes are never silent edits — mistakes are corrected by appended correction rows, so a manipulated history stays visibly recorded in the history.

Walk the unit once.

ROSTER



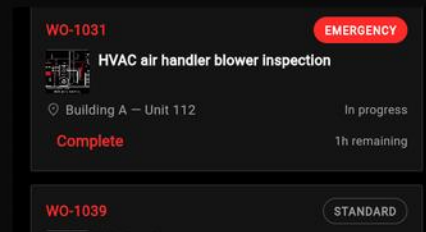
The server builds a dynamic checklist from the exact assets assigned to the unit.

SCAN + VERIFY



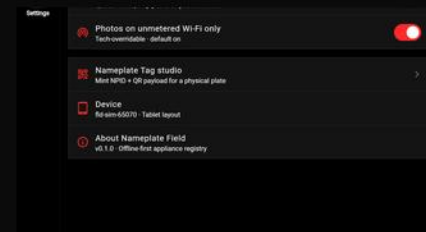
Tech walks the room, scanning tags in seconds. Unknown assets get tagged inline.

TRIAGE



Single-tap condition: Present, Damaged, Needs Service, or Missing.

AUTO-EMIT

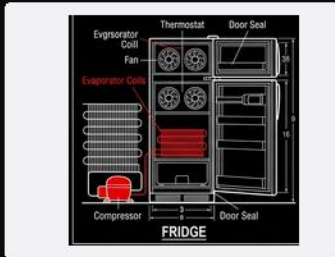


Completion auto-generates SLA-driven work orders for every flagged item.

Walk the unit once. Create perfect certainty. Everything else is automatically written down.

We trace physical lineage.

14-YR-OLD FRIDGE



Dead compressor.
Written off.



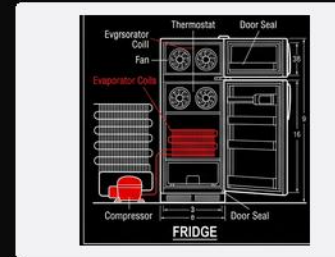
MAIN CONTROL BOARD
SALVAGED

\$0 cash cost.
\$215 imputed value.

```
part.source_asset_id  
> installed_in_asset_id
```



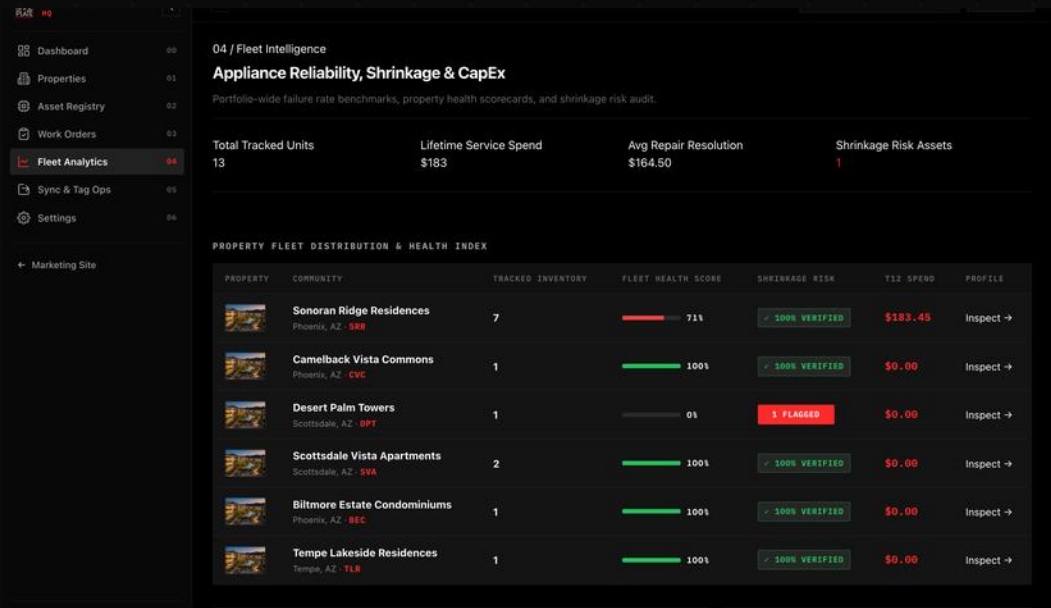
2-YR-OLD FRIDGE



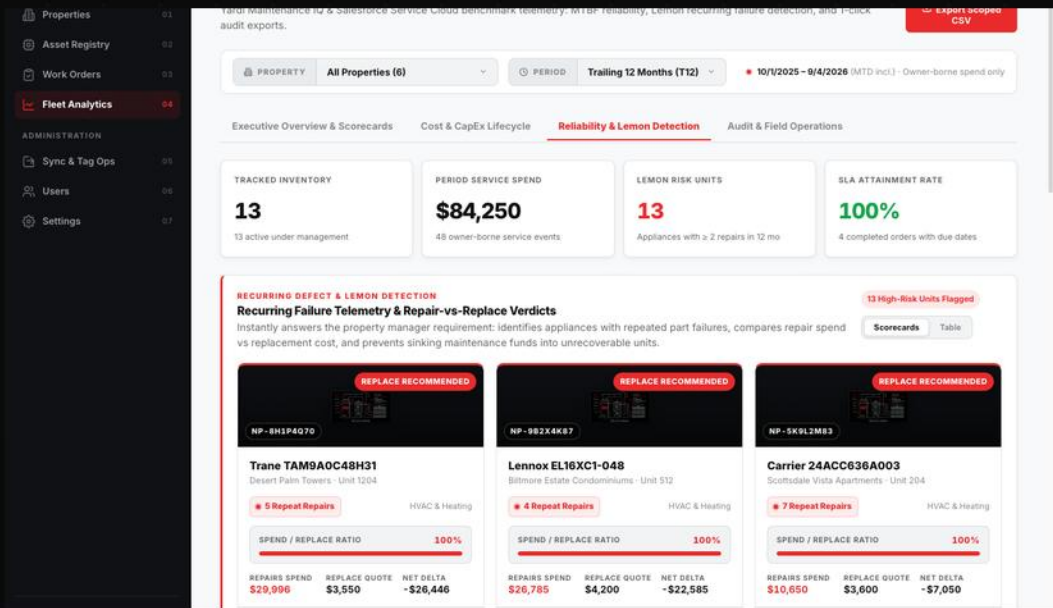
Needs board.
Salvage installed.

Shops get rewarded for reuse. Portfolios avoid thousands in unnecessary purchases.

Your numbers dictate: repair, replace, rebuy.



REALIZED LIFESPAN + CAPEX FORECAST



BRAND LEMON MATRIX

Assets, never people.

SYSTEM SIGNAL

AUTOMATED ACTION

No confirmed scan in 180+ days

→ Triggers a verification work order.

'Missing' finding during a unit turn

→ Opens a 30-day grace window.

Scan outside the expected property

→ Logged, flagged for HQ review.

Grace window expires with no scans

→ Escalates to unaccounted-for.

The 30-day grace window converts most 'missing' tags into benign relocations — preserving field trust.
If techs feel surveilled, they stop scanning. We never auto-accuse or rank technicians by loss.

Every scan enriches everyone.

PROPERTY A · ORG 1

Tech scans a
**“Whirlpool
WTW5000DW”**

missing model data typed once.



PROPERTY B · ORG 2

Tech scans the
**same model
a week later.**

Specs, life curves, parts — instant.

No customer-identifying data is ever shared. Only manufacturer specs and aggregated lifespan statistics.

After 50,000 tagged assets: “the dishwashers in your portfolio fail at 6.2 years; comparables last 9.8.”

Boring parts, exotic guarantees.

EDGE TIER

Field app

Flutter · Drift/SQLite

Offline mirror, scan pipeline, photo queue. Works in parking garages.

CORE TIER

Sync API + Ledger

FastAPI · Postgres



Append-only events, monotonic sequences, idempotent push/pull. SQLite for local pilots.

PRESENTATION

HQ + Resident portal

React 19 · TypeScript



Dashboards, dispatch kanban, analytics — and 3-page ticket intake for residents.

Why Postgres, not a document store? Historical integrity is the product: part lineage across locations and time is graph-shaped. Constraints, window functions, and append-only ledgers cannot silently rot.

SCAN VERIFICATION RATE

TARGET $\geq 70\%$

Share of service events and turn items backed by an actual hardware scan.

90-DAY PILOT

- 200–500 units deployed
- $\geq 95\%$ of in-unit assets tagged
- $\geq 80\%$ of events in-app, not on paper

WHY IT COMPOUNDS

- Each scan adds to the dataset
- Every feature unlocks downstream
- No dashboard saves an untouched product

: 3M-7881 TAMPER-DESTRUCTIBLE VINYL

BASE32 CROCKFORD



NAMEPLATE

NAMEPLATE ID

NP-7K2M4QX9

PROPERTY ASSET RECORD • DO NOT REMOVE
SCAN WITH NATIVE CAMERA TO RESOLVE
TELEMETRY

Walk the unit once.

Everything else
is already written down.

- Scan the plate.
- See the history.
- Log the fix.

[Tag your portfolio >](#)