Assimilate

RFID In Field Operations

Bin asset management, waste collection verification, workforce and equipment traceability



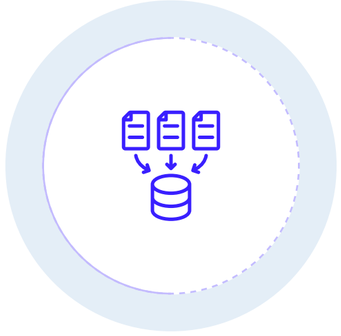
The field operations challenge

Work happens out on the street, away from systems. Records depend on people remembering to write things down.



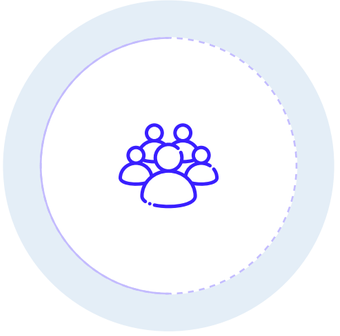
Bins

No trusted register of where each bin is, what condition it is in or when it went missing.



Collections

Service is proven by driver logs and paper. Disputes and missed-bin complaints are hard to settle.



People and Equipment

Who was on which vehicle, with which tools, is recorded by hand, if at all.

RFID turns every field event into a timestamped, verifiable record.

How RFID works



RFID tag

Chip and antenna on bin, badge or tool



Reader

Antenna reads the tag by radio, no contact



Edge unit

Handheld or truck unit adds time and GPS



Cloud platform

Rules, history, alerts and APIs



Dashboards

Operations, ERP, billing and reports

No line of sight

Tags are read through dust, dirt and paint, unlike barcodes.

Many tags at once

A reader can capture several tags in a single pass.

Built for the outdoors

Rugged tags withstand rain, impact and washing.

Types of RFID

Type	Frequency	Typical range	Strengths	Field fit
LF	125 kHz	Up to 10 cm	Tolerates metal and liquids	Access cards, animal tags
HF / NFC	13.56 MHz	10 cm to 1 m	Secure, readable by smartphones	Staff badges, close audits
UHF passive	860 to 960 MHz	Up to about 10 m	Low cost, fast multi-read	Bins, equipment, vehicles
Active	433 MHz or 2.4 GHz	30 m to 100 m+	Long range, battery powered	High-value assets, yards

Ranges are typical and depend on tag, reader, antenna and surroundings.

Matching RFID type to the use case

Use case	Tag	Reader	Why
Bin asset management	UHF on-metal or in-mould tag	Handheld and truck reader	Low cost per bin, survives weather
Collection verification	UHF tag on the bin body	Truck reader at lift arm, plus GPS	Reads at lift speed, no driver action
Workforce traceability	HF / NFC badge or UHF wearable	Vehicle door, depot gate	Secure ID with a tap or pass-through
Equipment traceability	UHF on-metal; active for high value	Depot portal, vehicle, yard	Issue and return log, find lost items

One platform, three use cases

Applications	Bin asset management	Collection verification	Workforce and equipment traceability
Platform	Device management, event processing, rules and alerts, analytics, open APIs		
Connectivity	4G/5G, Wi-Fi, LoRaWAN, with offline buffering in the field		
Field edge	RFID tags, handheld readers, vehicle readers, depot gate portals, GPS		

Bin asset management



Tag and register

Fit a tag to each bin and link its ID to site, type and owner.



Deploy

Issue bins to streets, buildings or customers and record the handover



Track and Audit

Handheld audits and truck reads update location and last-seen time.



Inspect and Repair

Log damage and repairs against the bin ID and schedule replacement

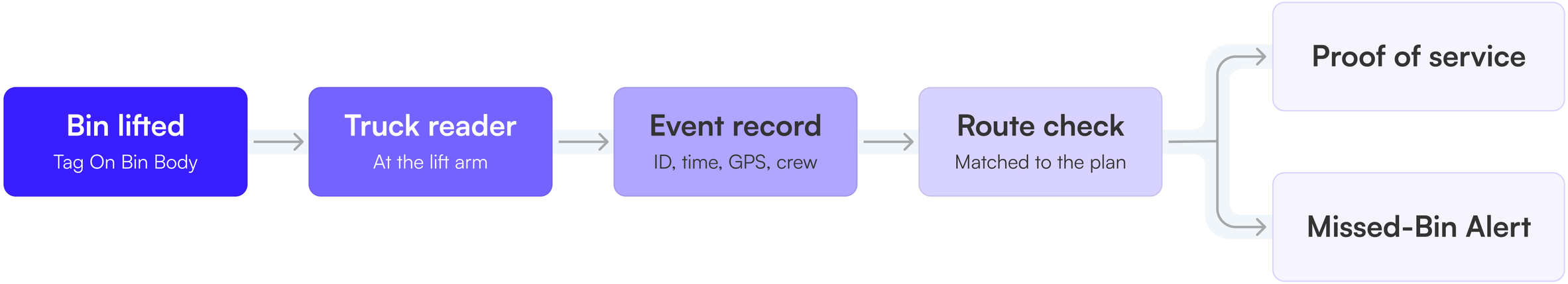


Replace and Retire

Retire lost or end-of-life bins while keeping the full history.

Outcome: one trusted register of every bin, with last-seen location and condition.

Waste collection verification



Automatic

Every lift is verified without driver action or paper logs.

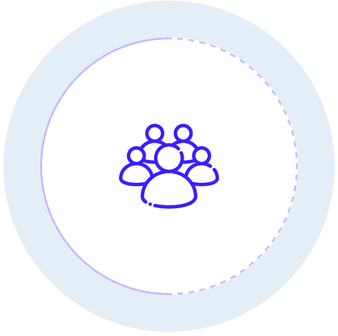
Defensible

Time, place, vehicle and crew back every service record.

Proactive

Missed bins surface the same day, before complaints arrive.

Workforce and equipment traceability



People

Crew badge read at the vehicle and depot gate. Shift start, crew-to-vehicle match and restricted-area access.



Equipment

Tags on tools, lifting gear and safety kit. Issue and return log, missing-item alerts, inspection due dates.



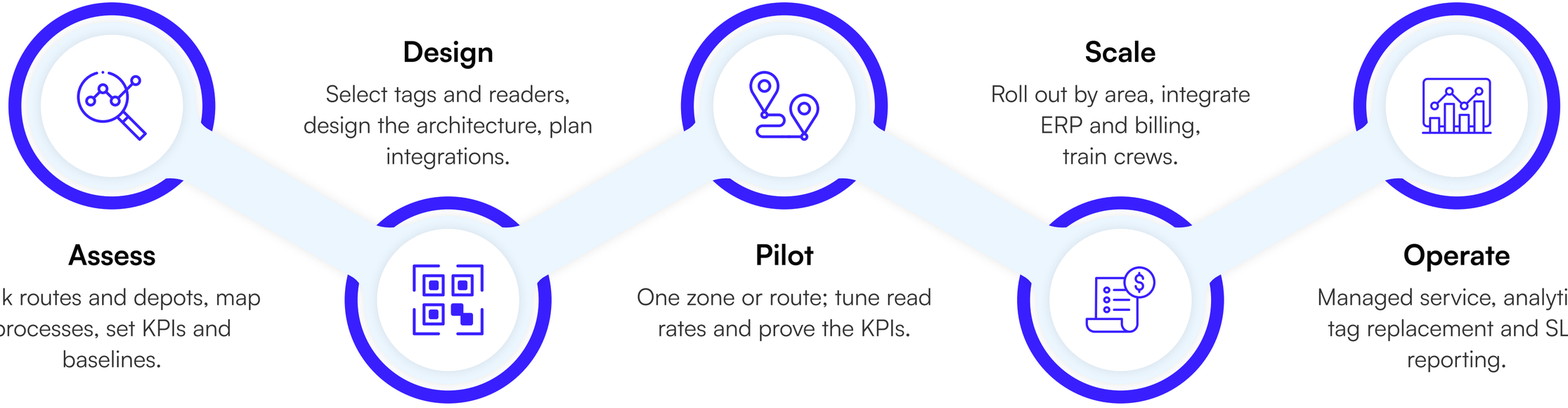
One linked record

Crew, equipment, vehicle and route together: who, what, where and when.

RFID turns every field event into a timestamped, verifiable record.

Solution approach

A phased path that proves value on one route before scaling.



Assess

Walk routes and depots, map processes, set KPIs and baselines.

Design

Select tags and readers, design the architecture, plan integrations.

Pilot

One zone or route; tune read rates and prove the KPIs.

Scale

Roll out by area, integrate ERP and billing, train crews.

Operate

Managed service, analytics, tag replacement and SLA reporting.

Data and integration

Data	Source	Used for
Bin register	Tag registry, handheld audits	Asset control, replacement planning
Collection event	Truck reader plus GPS	Proof of service, billing, disputes
Crew and equipment events	Badges and tool tags	Attendance, issue and return, safety
Alerts	Rules engine	Missed bins, lost assets, overdue inspections

Integrates with ERP and billing, GIS and route planning, fleet telematics, CRM and citizen complaints, BI tools.

Business value

Accountability

Proof of service for every bin lifted, ready for audits.

Asset control

Know where each bin is, its condition and its cost.

Productivity

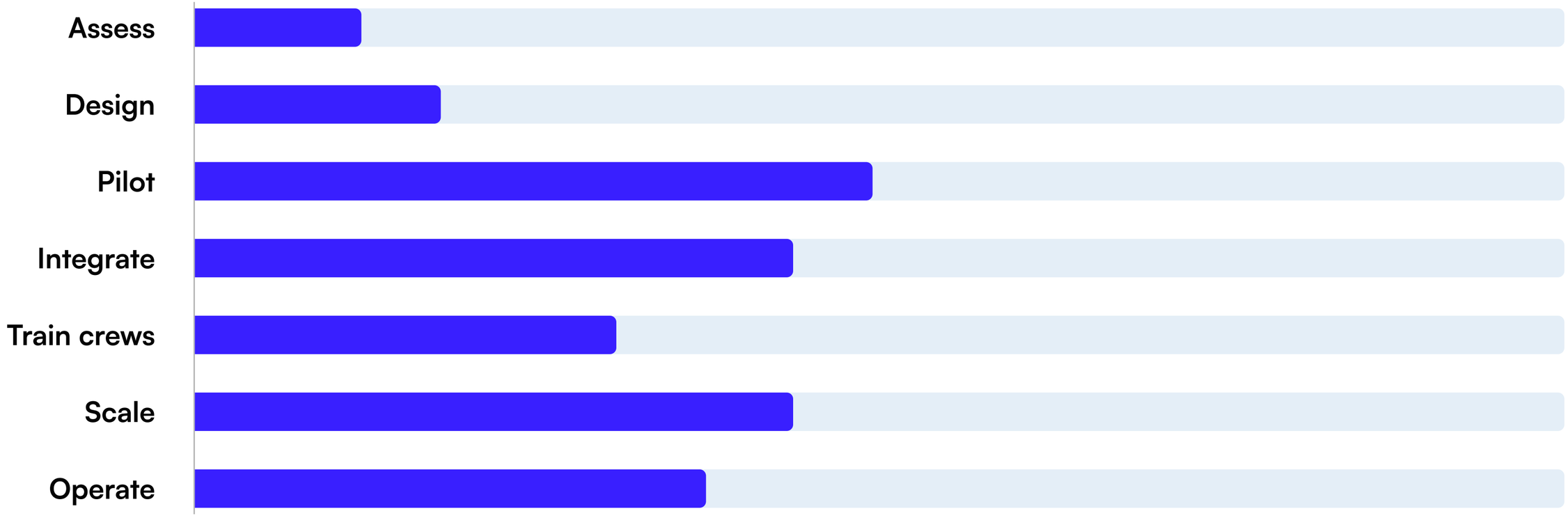
Automatic capture replaces paper logs and re-keying.

Safety and compliance

Trace crews, tools and vehicles for incident and audit reviews.

KPIs to track: verified collection rate, missed-bin rate, bin loss rate, audit effort, asset utilization.

Indicative roadmap: Twenty weeks



Weeks 1 to 20. Timing is indicative and confirmed after the site assessment.

Risks and Mitigations

Risk	Mitigation
Tag damage or loss on bins	Rugged on-metal or in-mould tags in a protected position
Read reliability in the field	Antenna placement and tuning in the pilot, manual override as fallback
Workforce privacy concerns	Consent, minimal data, clear policy, role-based access
Crew adoption	Hands-free design, short training, supervisor dashboards
Integration delays	API-first design, phased integration, early test data

Assimilate

Let's Build The Future

Of Intelligent Enterprises - Together

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