CASE STUDY 01

Optimising Missed Bin Collection Operations

Process mapping | Workflow automation | AI-assisted route optimisation

Context

A real local-government waste service where missed-bin jobs move between system, paper and field.

My role

Mapped the current process, found the delays, designed a future state and assessed the benefits.

Status

Conceptual improvement. Subject to technical, operational and financial validation.

Phil Black | Business Analyst • Process Improvement • AI Workflow Automation

A manual hand-off chain limits daily capacity

The problem

Missed-bin jobs start in TechnologyOne, are printed, planned by hand, handwritten in the field and re-keyed into TechnologyOne. Every hand-off adds delay and risk.

What I found

Route planning, Google Maps entry and end-of-day updates consume time that could complete jobs. Some jobs carry over to the next day and residents get no completion update.

What I propose

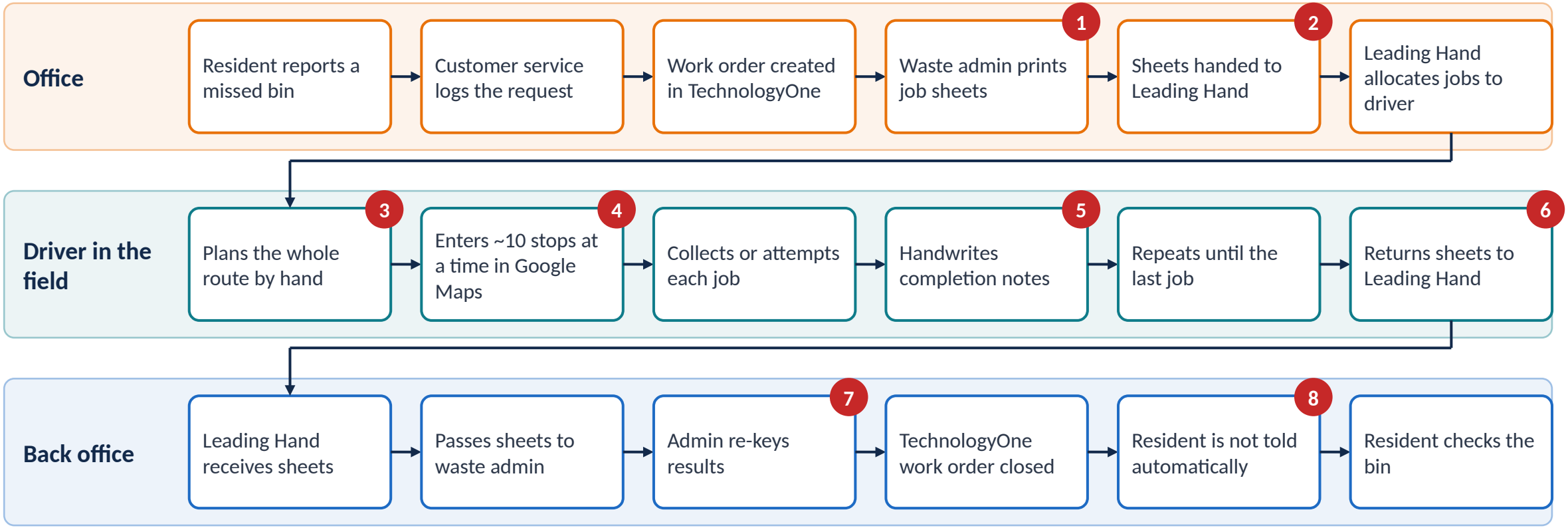
A digital job list with AI-assisted route sequencing, navigation without retyping, in-field completion, automatic TechnologyOne updates and an exceptions dashboard.

Potential impact (estimates)

About 60–75 minutes of driver capacity per day and potentially 10–15 more jobs completed daily, reducing next-day carry-over. To be validated in a pilot.

Opportunity: the value is not only administration savings. Better routing and digital field updates may increase daily completion capacity.

Current state: from system to paper and back



1. Paper job sheets create hand-offs
2. Information leaves TechnologyOne
3. Manual route planning: 30–45 min/day
4. Google Maps entry: ~30 min/day
5. Handwritten notes risk errors
6. End-of-day sheet handover delay
7. Manual TechnologyOne update: ~30 min/day
8. No proactive completion status

Root causes: manual planning and re-entry

Issue	Root cause	Operational effect	Business impact	Priority
Paper job sheets	TechnologyOne data is printed for field use	Physical hand-offs and delayed updates	Lost information and extra administration	**High**
Manual route planning	No integrated route optimisation	Missed or poorly sequenced addresses	Extra km and fuel, lower daily capacity	**High**
Repeated Google Maps entry	Driver keys in groups of up to ~10 stops	Interruptions, rework, lost productive time	~30 min/day lost, fewer jobs completed	**High**
Jobs carried over	Manual planning and inefficient routing	Some jobs slip to the next day	Service delay, backlog and follow-up work	**High**
Handwritten notes	No mobile completion interface	Unclear notes and data-quality risk	Rework, clarification calls, wrong updates	**Medium**
Duplicate TechnologyOne update	Field completion is not synchronised	Admin re-enters completion notes	~30 min/day admin and transcription errors	**High**
No customer status update	Status not linked to customer contact	Resident checks the bin or calls council	More enquiries, poorer experience	**Medium**

Root cause: once a work order is printed, everything downstream depends on manual planning, paper notes and later re-entry. Priorities are an initial assessment to validate with stakeholders.

Where the time goes each day

30–45 min

Manual route planning by the driver

~30 min

Re-entering stops into Google Maps

~30 min

Manual TechnologyOne update by admin

~30 min

Potential travel saving from optimised sequencing

What it could mean

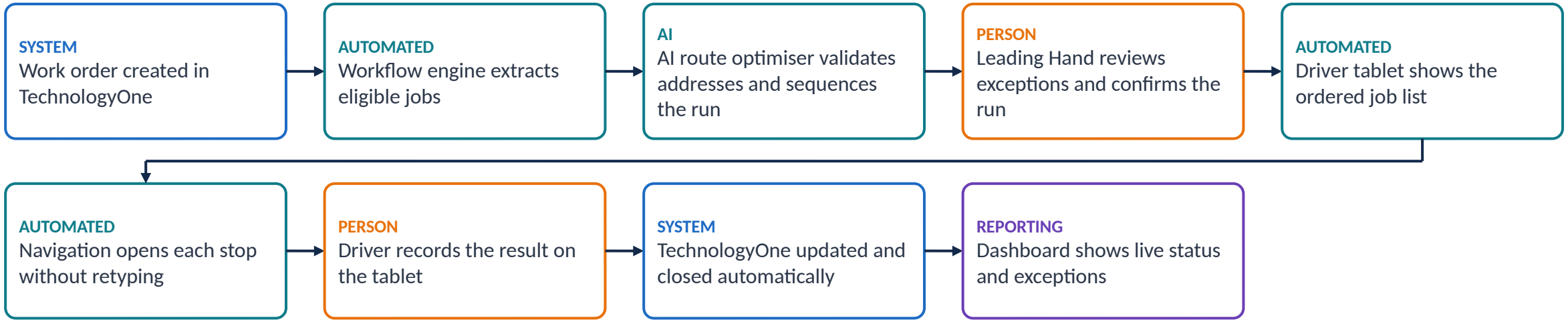
- Removing planning and cutting wasted travel may return ~60–75 min of driver time per day
- That is the basis for the 10–15 extra jobs per day estimate
- Implied marginal time is about 5–6 min per job

To confirm during discovery

- Some time components may overlap, so they are not simply additive
- Actual minutes per job and daily job volumes
- Whether enough waiting jobs exist to use the extra capacity

Observed baseline: combined manual administration was estimated at 90–115 min/day. These are observation-based estimates, not measured data.

Future state: an AI-assisted workflow



Automation points

- Work-order transfer and address validation
- Optimised sequencing and navigation
- Digital completion and automatic TechnologyOne update

Human control retained

- Leading Hand reviews exceptions
- Driver keeps field judgement
- Business rules govern closures; customer notices need approval

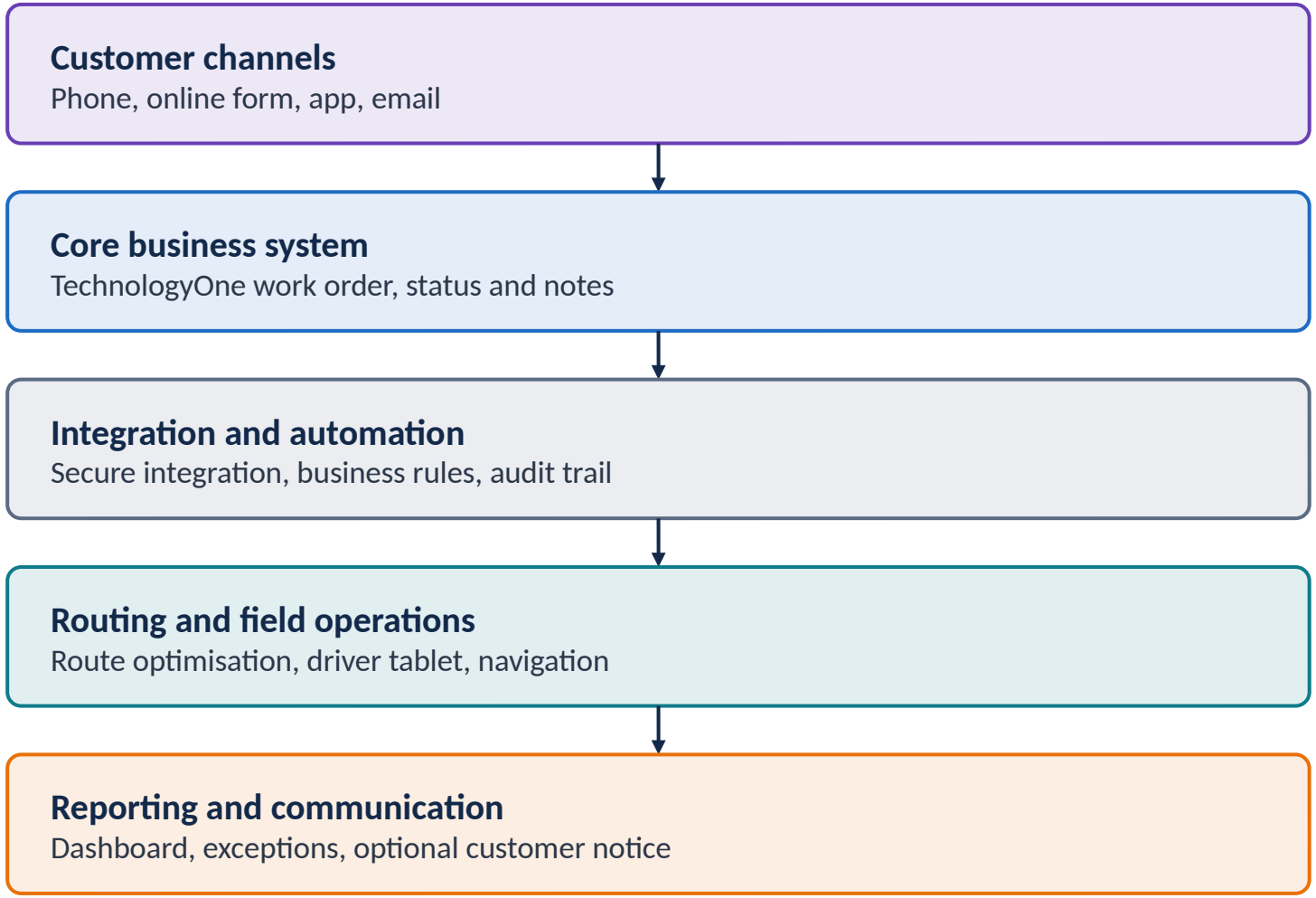
Conceptual: automation handles repetitive sequencing and data transfer while people keep control of exceptions and field decisions.

What changes for each role

Role	Today	Future state
Driver	Plans the route, retypes stops, handwrites notes	Receives a sequenced list, taps to navigate, records the result on a tablet
Leading Hand	Allocates paper sheets and collects them back	Reviews exceptions and confirms each run
Waste admin	Prints sheets and re-keys completion notes	Handles exceptions only. No re-keying
Resident	Checks the bin or calls the council	Optional completion notice, subject to approval
Operations management	Little live visibility of progress or carry-over	Dashboard of progress, carry-over and exceptions

Design intent: the information is entered once, at the point of work, and flows to every role that needs it.

Conceptual solution architecture



Governance

- Access control and privacy
- Device security
- Data retention and audit history
- Integration monitoring
- Business continuity

Questions for ICT and vendors

- Which TechnologyOne integration options exist?
- Which routing engine and licence model?
- How does the app work offline?

Business case: how benefits will be valued

Annual labour benefit
= operating days × hours saved per day × loaded hourly cost

Annual vehicle benefit
= operating days × km avoided × vehicle cost per km

Capacity benefit
= additional completed jobs × avoided next-day processing and follow-up cost

Payback
= one-off investment ÷ net annual benefit

Inputs to baseline first

- Jobs per day and carry-over rate
- Minutes per job
- Planning, entry and admin minutes
- Loaded hourly cost
- Kilometres per route
- Vehicle cost per km

No dollar value is claimed until the baseline is measured and validated.

Implementation roadmap: prove it, then scale

1. Discovery
Measure job volumes, manual time and carry-over

2. Solution design
Define workflow, integration and exception rules

3. Prototype
Test route sequencing and the digital job list

4. Controlled pilot
Compare completion, time saved and carry-over

5. Rollout
Training, devices, support, staged go-live

6. Improvement
Tune routing rules and monitor performance

Stage gates

- Baseline approved
- Design approved
- Prototype successful
- Pilot benefits confirmed
- Rollout approved

Delivery risk	Proposed mitigation
Integration complexity	Confirm integration options in design
Address quality	Validate and clean addresses first
Mobile connectivity	Offline-capable tablet app
User adoption	Involve drivers in the prototype
Vendor costs	Pilot before committing
Privacy and governance	Access controls, retention rules
Over-automation	Leading Hand reviews exceptions

What this case study demonstrates

Business analysis

- Current-state mapping
- Future-state design
- Requirements thinking
- Exception analysis

Process improvement

- Waste identification
- Workflow simplification
- Route efficiency
- Baseline measurement

Digital and AI

- AI opportunity assessment
- Workflow automation
- Route optimisation
- Integration concepts

Business case

- Benefit identification
- Assumption management
- ROI method
- Executive communication

I can observe an operational process, find the inefficiencies, map the current state, design a practical future state and explain the opportunity to operational and executive stakeholders.

Based on a real local-government process. Proposed improvements and estimates are conceptual and subject to validation.