

CASE STUDY

AI-Powered Logistics Automation

From Inbox Chaos to Automated Intelligence: How NodeCo Built a Custom Shipment Tracking System for a Leading AV Integrator

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EXECUTIVE SUMMARY

NodeCo designed and deployed a fully automated logistics intelligence platform for a leading national AV systems integrator transforming raw vendor shipping emails into structured data, real-time tracking responses, and proactive customer notifications — all without a dedicated IT team or enterprise TMS investment.

The system processes inbound shipping notifications from multiple vendors, extracts structured data using Claude AI, stores records in Airtable, and enables instant tracking status replies via a simple email format. Built on n8n and integrated with Gmail and the Anthropic API, the solution was developed rapidly and operates at a fraction of the cost of traditional logistics software.

3 Automated Workflows	100% Vendor Coverage	<5s Avg. Extraction Time	\$0 Per-Email Processing Cost*
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* Beyond existing API subscription costs

The Challenge

As a national AV integrator, the firm manages dozens of simultaneous projects involving hardware sourced from multiple vendors including TD SYNEX, Legrand AV, Extron, and others. Each vendor sends shipment notifications in a different format — some as structured HTML emails, others with critical data buried in PDF attachments.

The result was a fragmented, manual process:

- Project coordinators manually read each vendor email to extract PO numbers, tracking numbers, ship dates, and line items
- Information was re-entered by hand into internal systems, creating data entry errors and delays
- Field teams and end customers had no automated way to request shipment status — every inquiry required a manual lookup
- Partial shipments were difficult to track — a single PO could ship in multiple waves with different tracking numbers
- No audit trail existed linking vendor emails to internal records

"We had a team of eight buyers working a rotation schedule of one hour per day each just reading emails and copying tracking numbers into our ERP. There had to be a better way."

Business Impact of Manual Process

- Delayed shipment visibility across project teams
- Increased risk of missed or lost deliveries
- Staff time consumed by low-value data entry tasks
- Customer satisfaction risk from slow status updates
- No scalability as project volume grew

Why Off-the-Shelf Solutions Didn't Fit

- Enterprise TMS platforms require deep ERP integration and long implementation timelines
- Carrier-specific tools don't cover multi-vendor, multi-format email workflows
- SaaS logistics platforms are priced for high-volume shippers, not AV integrators
- No existing solution handled both PDF and HTML vendor email formats

The Solution

The client needed a custom three-workflow automation system on n8n that handles the full shipment intelligence lifecycle — from vendor email ingestion through AI extraction to customer notification and status response.

Workflow 1: Tracking Email Intake

Every inbound vendor shipping notification — regardless of format — is automatically processed and stored as a structured record in Airtable.

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|----|---|
| 01 | Gmail monitors the vendor inbox and triggers on every new email |
| 02 | The full message is fetched including HTML body and attachment metadata |
| 03 | An If node detects whether the email contains a PDF attachment and routes accordingly |
| 04 | Gmail's base64-encoded body is decoded into clean readable text |

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|-----------|---|
| 05 | The Claude AI API extracts structured fields: vendor name, PO number, tracking numbers, carrier, ship date, ship-to address, and line items |
| 06 | Extracted data is upserted into Airtable matching on PO number + tracking number to prevent duplicates |
| 07 | Email is marked as read to prevent reprocessing |

Workflow 2: Tracking Status Reply

Any team member or authorized user can request real-time shipment status by sending a simple email. The system looks up all matching records and responds automatically with a professionally formatted HTML email.

Request format: Send an email to the logistics mailbox with subject line "TRACK [PO Number]" — for example, "TRACK 1016701". The system responds within seconds with full shipment details, clickable tracking links, and an AI-generated summary.

The reply email includes:

- AI-generated plain-language summary of the shipment status
- Structured table showing vendor, carrier, tracking number, ship date, ship-to, and line items
- Clickable tracking links routed to the correct carrier (FedEx, UPS, or USPS)
- Support for multiple shipments per PO — all matching records are returned in a single consolidated reply

Workflow 3: Accuracy Feedback Loop

A built-in correction mechanism ensures AI extraction quality improves over time. When a team member identifies an incorrectly extracted record, they check the Incorrect flag in Airtable. The system automatically:

- Creates a correction row in a linked Correction Log table
- Sends an email notification to the reviewing team member
- Logs the delta between AI-extracted and human-corrected values for ongoing quality analysis

Technology Stack

Component	Tool	Purpose
Automation Engine	n8n Cloud	Workflow orchestration and node-based automation
AI Extraction	Anthropic Claude Haiku	Structured data extraction from unformatted email content
Email	Gmail + OAuth2	Inbound vendor email processing and outbound reply sending
Database	Airtable	Structured shipment record storage, search, and review
Search Interface	Node.js + Express	Internal web app for searching and viewing shipment records
Carrier Tracking	FedEx / UPS / USPS	Direct tracking link generation per carrier

Outcomes & Business Impact

Operational Efficiency

- Eliminated manual data entry for all vendor shipping notifications
- Shipment records available in Airtable within seconds of vendor email arrival
- Tracking status requests answered automatically — no staff involvement required
- Multi-vendor support regardless of email format or attachment type
- Duplicate shipment prevention through intelligent upsert logic

Visibility & Accuracy

- 100% of vendor shipping emails captured and structured automatically
- Full audit trail of every shipment linked to its source email
- AI extraction accuracy monitored through built-in correction feedback loop
- Partial shipment tracking — all records per PO returned in a single consolidated reply
- Searchable shipment database accessible to all team members via web interface

Planned Enhancements

The system is designed to grow. The following capabilities are in the roadmap:

Feature	Description
Project Status Request	Send a list of POs and receive a consolidated AI summary of when all items will arrive — multi-PO project tracking in a single email

Automated Delivery Notifications	Proactively notify end customers and field teams when their shipment has left the vendor warehouse
Attachment Storage	Store PDF shipping documents directly on Airtable records for future reference and audit
Dedicated Production Mailboxes	Separate Gmail accounts for vendor notifications and internal tracking requests for improved security and routing
Sender Whitelisting	Restrict tracking status requests to authorized internal domains only

Why This Approach Matters

The logistics automation landscape is dominated by enterprise platforms designed for high-volume shippers and large distribution operations. For AV integrators, managed service providers, and specialty contractors, these tools are overbuilt, overpriced, and require IT resources that most mid-market firms don't have.

What this solution demonstrates is that a purpose-built, AI-powered automation using readily available tools can deliver enterprise-grade logistics intelligence at a fraction of the cost and complexity. The system:

- Requires no ERP integration or legacy system modification
- Adapts to any vendor email format without custom parsers for each sender
- Scales with project volume without additional headcount
- Can be extended by any technically proficient team member using n8n's visual workflow builder
- Costs a fraction of traditional TMS or logistics SaaS platforms

This solution demonstrates that AI-augmented automation is no longer the exclusive domain of enterprise organizations. Mid-market firms can build sophisticated, production-grade logistics intelligence systems quickly and cost-effectively using modern no-code and AI tools.

Built with NodeCo

This solution was built using NodeCo — a company focused on modern automation that helps businesses design, deploy, and scale AI-powered workflows without enterprise complexity. Learn more at nodeco.ai