



C A S E S T U D Y

From Inbox to ERP: Automating End-to-End Invoice Processing with AI

How LTC Software Solutions and AVI8 turned a 40-hour-per-week manual process into a mostly hands-off operation

Prepared for

AVI8

Implemented by

LTC Software Solutions



At a Glance

Client	AVI8 (back-office process outsourcing), sister company to LTC Software Solutions
Challenge	Manual three-way matching and data entry consumed AP staff hours with high error risk
Solution	AI-powered email-to-ERP pipeline that validates invoices, generates import-ready CSVs, and routes exceptions to humans only when needed
Stack	Claude Opus (API), Claude Code, Python, Prefect, Microsoft Graph API, Foundation Software (CSV import), OneDrive, Azure
Timeline	Discovery through production deployment
Results	AP workload reduced from 40+ hrs/week to ~8 hrs/week (80% reduction), touchless processing for clean invoices, near-elimination of data entry errors

The Challenge

AVI8's accounts payable team was buried in manual work. Every invoice came in the same way, as an email attachment or embedded graphic, and every one kicked off the same tedious sequence: open the email, download the PDF, split bundled documents into individual invoices, manually key each line item into Foundation Software, then cross-reference purchase orders, quantities, and prices against what was already in the system.

Three-way matching was the real time sink. Verifying that the invoice, the purchase order, and the receiving record all agree meant bouncing between email, PDF viewers, and Foundation Software all day. The AP staff spent most of their time on work that added zero analytical value: downloading files, re-keying data, and eyeballing numbers across screens.

The cost went beyond labor hours. Fatigue led to errors. A mis keyed quantity or a missed price discrepancy could flow into financial statements and sit there undetected. These are the kinds of silent inaccuracies that compound over time. As AVI8's CFO Beberly Castellanes put it: the manual purchase-to-pay process carried "inherent risk of financial misstatements due to human intervention."



On top of all that, real-world invoices are messy. Handwritten modifications, duplicate line items showing up as both summary and detail, inconsistent formatting from vendor to vendor. Any automation that couldn't handle those edge cases would just trade one type of manual work for another: triaging failures instead of processing invoices.

The Approach

LTC and AVI8 are sister companies, so this was a true collaborative effort between LTC's software engineering team and AVI8's AP operations staff, with both sides invested in the outcome. The engineering team worked directly alongside the people doing the AP work every day, which meant faster feedback loops and fewer assumptions baked into the design.

The team started where the invoices started: the inbox. Rather than automating one piece of the workflow and hoping the rest would follow, the goal from day one was a true end-to-end pipeline, from email all the way to Foundation Software, with human intervention only where it actually adds value.

Discovery took about two weeks. LTC's engineers shadowed AVI8's AP staff through their daily routine, mapping every step, every decision point, every place where things broke down. The big insight wasn't that any single task was the bottleneck. It was the accumulated friction of dozens of manual handoffs. The architecture needed to eliminate those handoffs, not just make individual steps faster.

The scope of what had to be built was significant. This wasn't a simple OCR-and-import project. The system needed to monitor email inboxes, parse and split PDF attachments (including handling multi-invoice bundles), extract structured data from wildly inconsistent document formats, run a full seven-check validation against the ERP, generate properly formatted import files, manage exceptions with detailed reporting, and deliver audit-ready summaries after every run. Getting all of those pieces to work together reliably, especially on real-world invoices with handwritten edits and formatting quirks, required deep integration work and careful orchestration.

The engineer leading the build used Claude Code as the primary development environment, which allowed a single developer to move at the pace you'd normally expect from a larger team. But speed wasn't the point. The complexity of the integration, the number of edge cases in document processing, and the zero-tolerance-for-errors nature of financial data made this a demanding build regardless of team size.

Claude Opus, accessed via API, handled the invoice data extraction. This was the critical technology choice. Traditional OCR struggles with the variability of real-world invoices: handwritten notes, inconsistent layouts, multi-invoice PDFs. Claude Opus understands document structure and context. It can look at an invoice that presents line items twice (once as a summary, once as detail) and pull the right numbers without double-counting. That kind of contextual intelligence is what separates it from rules-based extraction.



For getting data into Foundation Software, the team took a pragmatic approach: generate validated CSV files that map to Foundation’s existing import schema. No custom API integration, no direct database writes. Just clean files in the format Foundation already expects. It’s simpler, more maintainable, and works within the ERP’s supported data pathways.

Prefect handles workflow orchestration, giving the team visibility into every processing run, automatic retry logic, and the kind of audit trail you need when you’re dealing with financial transactions.

The Solution

The system operates as a continuous automated pipeline with four stages.

Stage 1: Email Ingestion and Document Processing. The system watches AVI8’s AP inbox through the Microsoft Graph API. When invoices arrive, it downloads the attachments, splits bundled PDFs into individual invoices, standardizes the file naming, and stores originals in OneDrive. Processed emails get moved to a “Processed” subfolder. Failures go to a “Failed” folder so nothing gets lost.

Stage 2: AI-Powered Data Extraction. Each invoice goes to Claude Opus via API. Claude reads the full document, including handwritten changes and non-standard layouts, and returns structured data: invoice number, vendor, date, PO number, line items with quantities and prices, subtotals, freight, tax, surcharges. It handles the messy stuff that breaks traditional OCR, like invoices with handwritten corrections or data presented in multiple formats on the same page.

Stage 3: Three-Way Match Validation. The extracted data runs through seven validation checks: PO existence and status, line item matching, quantity verification (making sure invoiced quantities don’t exceed what was ordered or received), price verification within a configurable tolerance, invoice total reconciliation, duplicate detection, and vendor validation. Each check produces a pass/fail with detailed reasoning.

Stage 4: CSV Generation and Exception Routing. Clean invoices get transformed into import-ready CSV files and loaded into Foundation Software. No one has to re-key anything. Invoices that fail validation get routed to an exception queue with reports explaining exactly what didn’t match and why, so AP staff can resolve issues quickly instead of hunting for the problem.

After each run, the system sends a summary email with an Excel workbook attached. Four tabs: processing summary with success rates and totals, vendor statistics with mismatch notes, invoice-level detail, and a line-item breakdown. Leadership gets full visibility without logging into another system.

The Results

Before this project, AVI8 had a full-time employee spending 40+ hours per week on accounts payable processing for a single client. That same person now spends about one day a week on AP and uses the



rest of the week for higher-value work for the client and the broader business. That's an 80% reduction in AP labor.

Clean invoices flow from email to Foundation Software without anyone touching them. The three-way match that used to mean pulling up multiple screens and manually comparing numbers now happens in seconds. When the system flags an exception, it tells the AP team exactly what's wrong, so resolution takes minutes instead of the usual detective work.

Manual data entry errors are essentially gone. The system catches price mismatches within configurable tolerances, flagging real discrepancies while letting minor rounding differences pass through. That precision addresses the financial misstatement risk that concerned AVI8's leadership.

"Using AI tools to automate our transactional processes like accounts payable streamlines our day-to-day operations, boosts efficiency, generates cost saving, improves accuracy in our back-end financial processes, and reduces inherent risk of financial misstatements due to human intervention."

— **Beberly Castellanes, CFO, AVI8**

The system processes live invoices daily. The AP team's focus has shifted from data entry to exception handling and vendor management, the work that actually benefits from human judgment.

Key Takeaways

- **Automate the full workflow, not just one step.** Eliminating a single bottleneck in a multi-step process just moves the problem. The real ROI comes from end-to-end automation where humans only handle genuine exceptions.
- **AI extraction handles what OCR can't.** Real-world invoices have handwritten edits, inconsistent formats, and duplicate data. Large language models like Claude Opus understand document context in ways that rules-based systems simply don't.
- **Validation is where the value lives.** Pulling data off an invoice is only half the job. Automated three-way matching against the ERP catches discrepancies before they hit the financial statements.
- **Transparency drives adoption.** Detailed run summaries, clear exception reports, and organized email folders give AP teams confidence in the system. That trust is what gets people to actually stop doing things the old way.

*Dealing with similar challenges around manual AP or document-heavy workflows? LTC Software Solutions builds AI-powered automation that works with your existing systems. **Let's talk.***