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The Agentic Inbox: Solving the “Last Mile” of Operational ERP Automation

Reimagining supply chain operations with an agentic AI email-processing engine that bridges unstructured inbox data directly into enterprise ERP systems.

Overview

QBurst engineered an agentic email processing platform using Azure AI Foundry and Azure OpenAI to bridge unstructured supplier communications and core ERP systems for a major US food distributor.

- **Automated Email-to-ERP Processing:** Intelligently parses complex supplier intent—such as SKU substitutions and partial shipments—from unstructured Outlook emails, using confidence scoring to route ambiguous records to a side-by-side Human-in-the-Loop (HITL) review queue.
- **Operational Efficiency & Accuracy:** Decreased manual team workload by 50% while ensuring 100% data accuracy in ERP records and effortlessly absorbing seasonal spikes in email volume.

50%

Reduction in Manual Effort

100%

ERP Data Accuracy



Client Profile

Headquartered in the United States, the client is a major food distributor servicing broad geographic regions. The organization focuses on supply chain excellence, operating at scale to coordinate thousands of daily supplier orders and inventory fulfillment workflows.

Challenges: Unstructured Communications and Manual Overhead

The client's reliance on manual email processing created severe operational drag and increased the risk of inventory record errors across the enterprise.

- **Unstructured Data Bottlenecks:** Supplier emails containing non-standard confirmation text, partial delivery updates, and SKU substitutions could not be processed by traditional rule-based bots.
- **Manual Operational Drag:** Human operators acted as manual middleware, reading inbox messages and rekeying data into ERP systems line by line.
- **Risk of Unverified Data:** Automated updates without semantic validation risked introducing hallucinated or inaccurate data into core enterprise records.
- **Scalability Bottlenecks:** Seasonal volume spikes led to processing backlogs, delayed confirmation cycles, and increased administrative overhead.

Solution: Agentic Email Processing Engine

We delivered a four-layer agentic architecture using Azure AI Foundry and Azure OpenAI to classify, extract, validate, and finalize unstructured supplier emails into structured ERP payloads.

- **Ingress & Orchestration Layer:** Power Automate monitors shared Outlook inboxes to capture raw email body text, headers, and metadata, assigning unique workflow correlation IDs for complete tracking.
- **Intelligence & Classification Layer:** Azure OpenAI agents perform single-step semantic reasoning to determine supplier intent, extract entity fields into predefined JSON schemas, and assign granular confidence scores.
- **Backend API & Persistence Layer:** A RESTful gatekeeper API validates extracted data against business logic, auto-finalizing high-confidence records while routing ambiguous cases to an audit-ready persistence database.
- **Selective Human-in-the-Loop (HITL) Governance:** A centralized side-by-side UI displays the original email next to the parsed data, enabling operators to quickly approve, edit, or reject edge cases.

Technical Highlights

- **Agentic Reasoning Engine:** Single-step semantic interpretation for complex intent classification (Confirmed, Partially Confirmed, Rejected) and structured JSON extraction.

- **Confidence-Based Routing:** Automated decision forks that split high-confidence extractions directly to the ERP while routing edge cases to HITL review.
- **Immutable Audit Logging:** Full database traceability capturing raw email payloads, extraction schemas, agent confidence scores, user edit histories, and final ERP submission states.

Impact: Enhanced Operational Agility and Data Accuracy

The work established a structured approach for moving from platform inventory toward risk-based decisions and accountable operations.

- **50% Effort Reduction:** Significantly decreased manual data entry, allowing operations teams to focus on critical supply chain exceptions.
- **Near Real-Time Processing:** Accelerated confirmation cycles from hours to near real-time execution across all supplier channels.
- **100% ERP Accuracy:** Eliminated data errors in core ERP systems through automated validation rules and side-by-side human sanity checks.
- **Built-in Scalability:** Enabled the client to absorb extreme seasonal email volume spikes without adding operational headcount.