AI²
Artificially Intelligent Invoices

Team Copper
Fall 2025
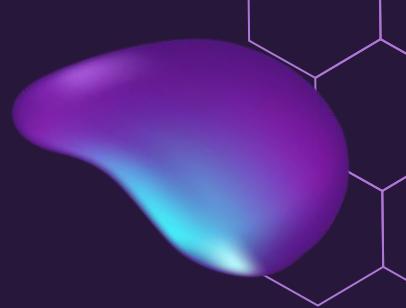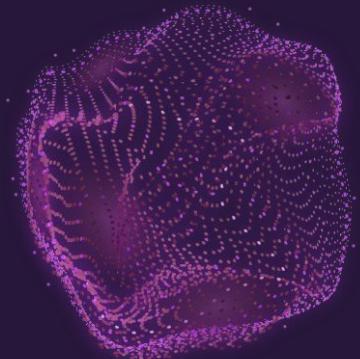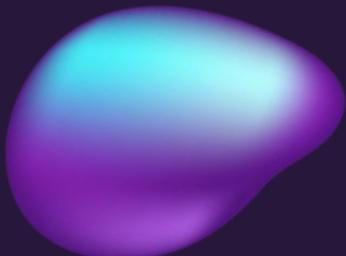
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Meet The Team

Dusan Djordjevic

Julian Diaz

Lynda Salinas Ascanova

Savannah Todd

Tommy Fuller

Craig Grubb

Michael Nimitz

Quin Elson

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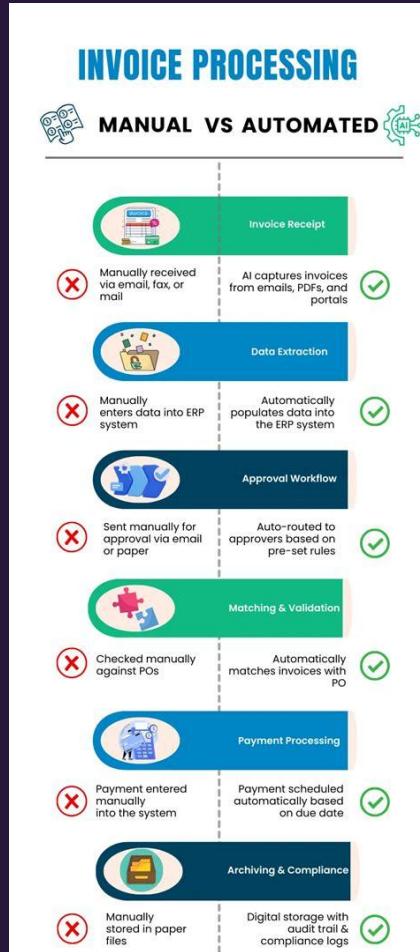
Background

- Manual invoice processing is still widespread across a variety of industries: Approximately 90% of companies rely on manual processing

- Cost per invoice: $12-$40 (manual) as opposed to $3-$6 (automated) [3]

- Turn around time: 10-15 days for manual processing vs. less than 5 days with an automated system

- Errors are made an estimated 1%-3% of the time when manual processing is used, which can strain business relationships

- Overall: Manual processing is expensive, slow, and prone to errors

INVOICE PROCESSING

MANUAL VS AUTOMATED

Invoice Receipt
Manually received via email, fax, or mail
AI captures invoices from emails, PDFs, and portals

Data Extraction
Manually enters data into ERP system
Automatically populates data into the ERP system

Approval Workflow
Sent manually for approval via email or paper
Auto-routed to approvers based on pre-set rules

Matching & Validation
Checked manually against POs
Automatically matches invoices with PO

Payment Processing
Payment entered manually into the system
Payment scheduled automatically based on due date

Archiving & Compliance
Manually stored in paper files
Digital storage with audit trail & compliance logs

[3]

Background

- ◆ 96% of employees report dissatisfaction with the AP tools that they have been provided with.[4] There is clearly a deficiency with the tools currently available.

- ◆ One third of accountants cite that many of their mistakes are caused by overextending themselves at work.[4]

- ◆ As part of the AP team, accountants and their coworkers would have their workload greatly reduced by automating invoice processing.

- ◆ In summary, automating invoice processing would not only let AP employees shift their focus back onto work utilizing their special skills, and reduce accounting errors, it would greatly boost employee morale as well.

[5]

Background ADS Case Example

- ◆ ADS processes 150,000 invoices annually from ~3,000 individual suppliers
- ◆ A small team of around 6 staff members handle invoices that are received in a variety of formats PDFs, spreadsheets, etc.
- ◆ Manual handling leads to
  - ○ Delays and payment backlogs
  - ○ Errors (duplicates, mismatches, etc.)
  - ○ Staff overload due to (needless stress over inefficiency)
- ◆ Bottom Line: supplier frustration, compliance risks and potential penalties

Cost Per Invoice (CPI) for Consumption-Based Services

https://www.quadient.com/en/blog/ap-automation-by-the-numbers-10-statistics-to-know

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Problem Statement
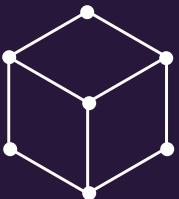
- Accounts Payable (AP) manual processing is costly and inefficient. Between labor costs, printing and mailing expenses, and accounting for errors, each manually processed invoice can cost between $12 and $35, which adds up across thousands of invoices. A manually processed invoice takes an average of 14.6 days to process.

- Every year, ADS receives over 150,000 invoices from about 3,000 suppliers. These invoices arrive mostly by email and come in many different formats (PDFs, scans, spreadsheets, etc.). The AP team, only 6 people, must manually review each invoice and compare it to the company's Purchase Order. This magnifies the issues of AP manual processing, leading to a high workload, delays, and potential for errors.

Who is Affected
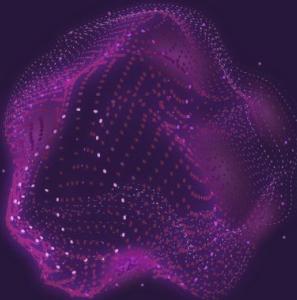
- Users
  - ADS Accounts Payable team, AP manager, and Finance/Accounting leadership are all looking to automate simple, common invoices.
- Customers
  - ADS, the company itself would be willing to provide compensation for a satisfactory product.
- Stakeholders
  - Vendors connected with ADS, ADS Finance, and ADS executives would all experience shorter turnaround times and more effective use of labor with automation of common, simple invoices.
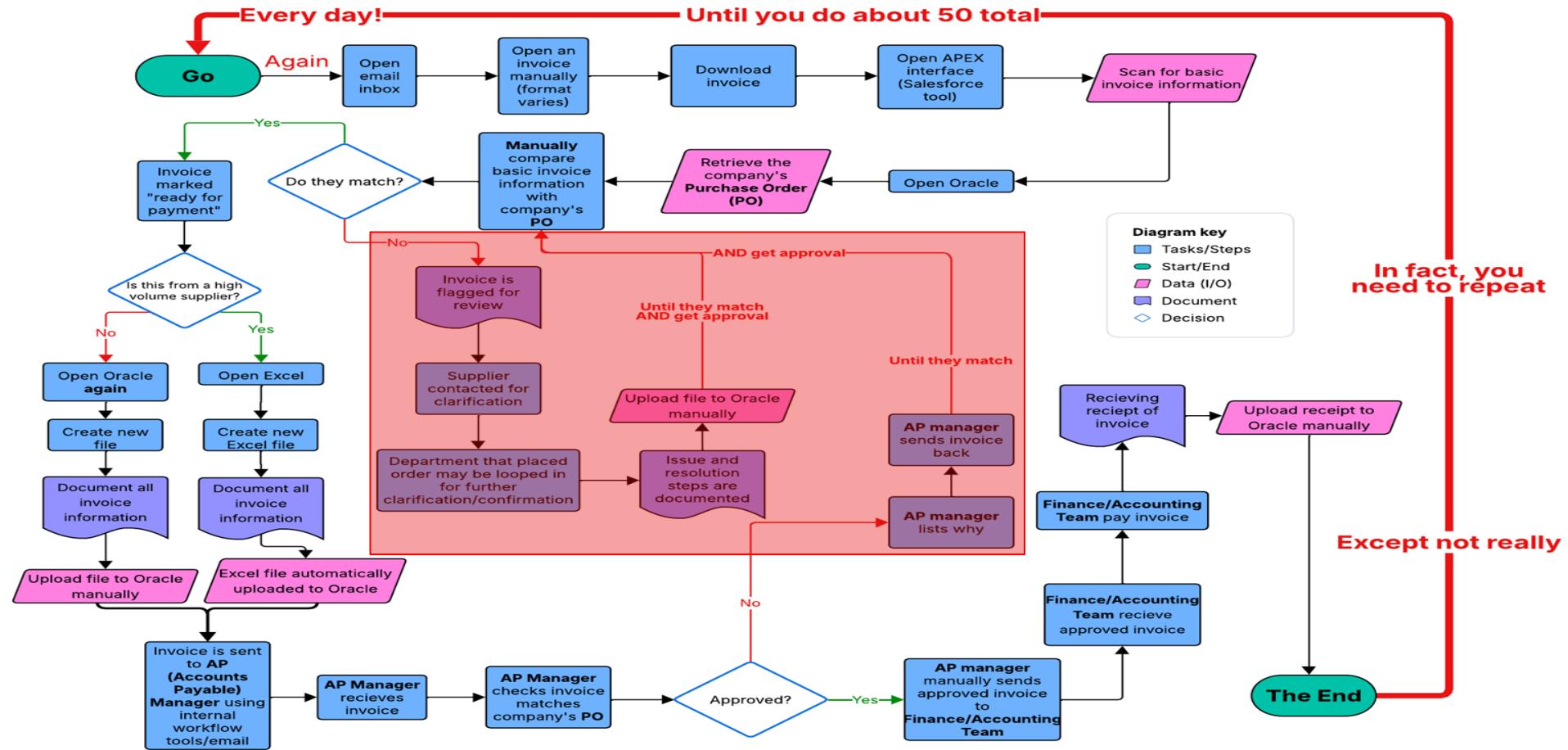
Problem Characteristics

◆ **Excessive Labor Hours:** Labor accounts for 62% of total AP processing costs, mostly consisting of repetitive checking rather than value-added work

◆ **High Error Potential:** 39% of invoices contain errors, and ⅓ of businesses suffer from making duplicate payments

◆ **Delays:** Invoices take an average of 14.6 days to process, payments slowed down due to backlogs, leading to missed discounts and late fees

◆ **Printing and Mailing Expenses**: A small cost per transaction, but accumulates over time.
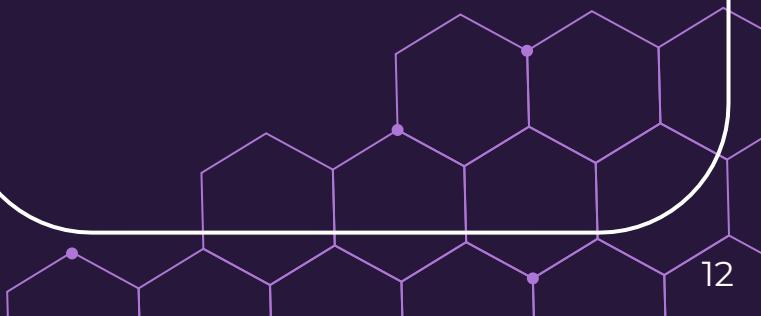
Current Process Flow

Our Solution: AI²

- AI² is a web-based platform that helps organizations manage high volumes of invoices with greater speed, accuracy, and transparency.

- Designed to integrate into existing financial workflows, it streamlines repetitive processing, prioritizes exceptions, and continuously adapts to diverse invoice formats across industries.

- By reducing manual workload while preserving oversight, AI² enables faster payments, fewer errors, and stronger financial compliance.

AI² and ADS

◆ For ADS specifically, AI² would relieve pressure on a small Accounts Payable team that currently faces over 600 invoices per day.

◆ By automating intake and matching, while routing edge cases for staff review, the system reduces backlogs and errors without removing human oversight.

◆ This allows ADS to accelerate payment cycles, strengthen supplier relationships, and improve overall financial health — outcomes that mirror the benefits other organizations can expect across the industry.
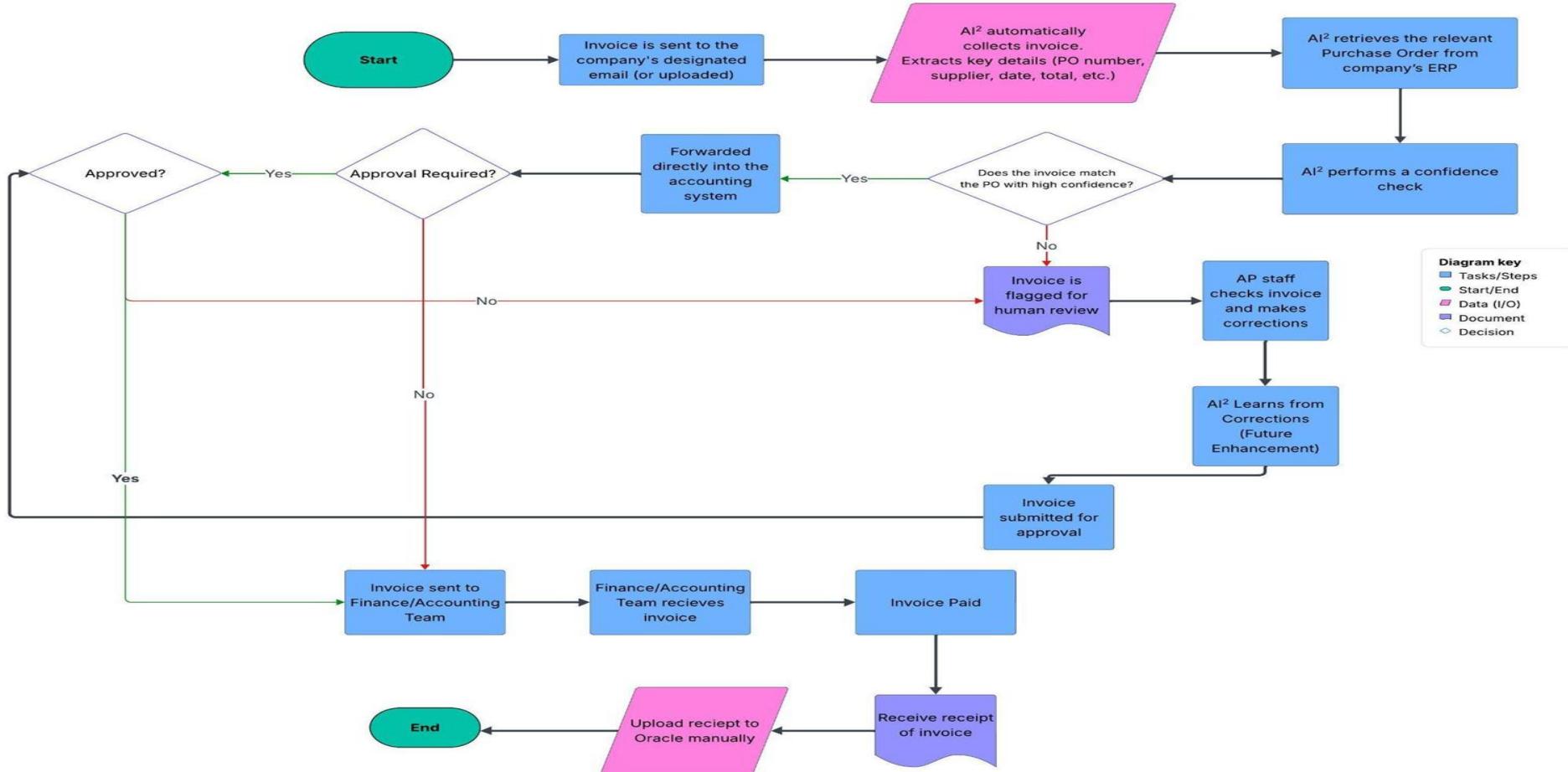
Solution Characteristics

- ◆ Efficiency – Automated Invoice Capture and Organization
  - ○ All invoices are automatically captured from email and structured for review, reducing manual file handling.
- ◆ Accuracy – Smart and Fast Matching
  - ○ AI^2 automatically compares invoices to purchasing orders, accelerating processing while minimizing errors and backlogs.
- ◆ Adaptability – Learning from Corrections
  - ○ The system improves by learning from staff interventions, reducing redundant work and enabling staff to focus on complex cases.
- ◆ Reliability – Confidence Scoring and Error Handling
  - ○ Matches are scored for certainty, with high-confidence items prepared for upload and low-confidence items flagged for review. This ensures fewer mismatches, duplicates, and overlooked errors.
- ◆ Transparency – Auto Logging and Compliance
  - ○ Every invoice and action is tracked in the database, ensuring auditability, compliance, and organizational trust.

Solution Process Flow

What it Will Do

- Email Intake and Storage: Emails will be taken upon arrival and be sorted and prioritized.

- AI PO Matching: Invoices will be matched to their corresponding purchase order.

- AI Confidence Scoring: Scoring system based on certainty of correct purchase order to invoice matches.

- Error Matching: PO matches with lower confidence scores will be prioritized for human intervention.

- ERP Integration: Allow for synchronization of AI² to other software systems.

- ML from Human Interaction: System updates matching based on staff corrections.

What it Will Do

- **Audit Logging:** Invoices and system decisions are saved in a database for subsequent reviews.

- **Quick Implementation:** Easy for client to plug in and begin using.

- **Tailored for client:** Specially configured to meet the needs of ADS.

- **Long-tail vendor handling:** Streamlines monitoring of invoices from vendors supplying lower-frequency products

- **Easily customizable:** Staff will be able to make tweaks to prioritize certain invoices.

- **Adaptable on the fly:** Customizations can be made at any time.

What it Will Not Do

- AI² will not instill a prioritization system for emails that are not invoice-related. The system will be set up to make priority-related decisions based on the invoice confidence scores, which will not translate to other email content.

- AI² will not allocate the low confidence invoices to specific team members. It is outside of AI²'s purview to assign work to human workers.

- AI² will not be tailored toward any other enterprise than ADS at this time. AI² will be made to work specifically with their existing systems.

Competition Matrix

	AI^2	Tipalti	Vic.ai	Stampli	Medius
Volume handling	■	■	■	■	■
Error reduction	■	■	■	■	■
Less human interaction	■	■	■	■	■
Timeliness	■	■	■	■	■
Email intake & storage	■	■	■	■	■
AI PO matching	■	■	■	■	■
AI confidence scoring	■	■	■	■	■
Continuous learning from past corrections	■	■	■	■	■
Audit logging	■	■	■	■	■
ERP integration	■	■	■	■	■
Quick implementation	■	□	□	□	□
Tailored for client	■	□	□	□	□
Long-tail vendor handling	■	□	□	□	□
Easily customizable	■	□	□	□	□
Adaptable on the fly	■	□	□	□	□

Development Tools
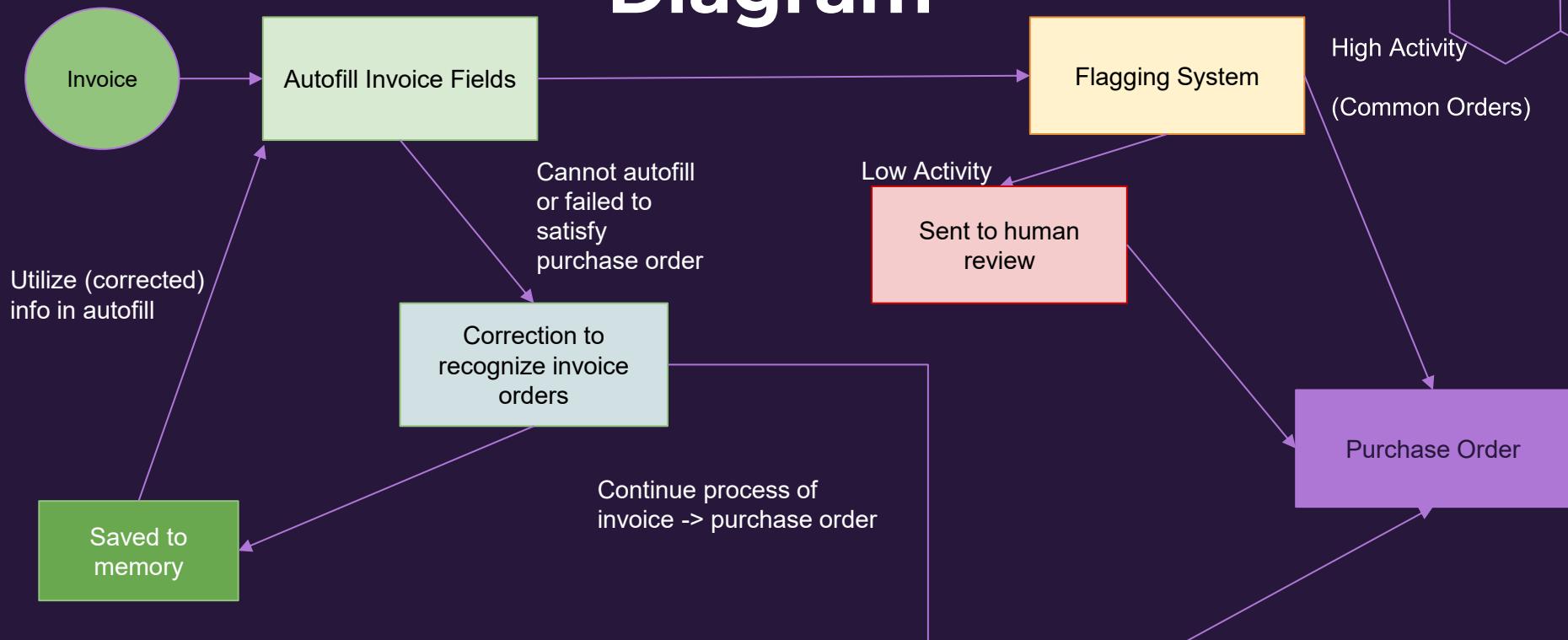
- IDE: VSCode
- Version Control: Github
- Website: Html on Github Pages
- Team Management: Clickup?

Major Functional Components

- ◆ Autofilled invoice fields:
  - ○ Following what purchase orders have been fulfilled, the system will keep track of the format of the invoice, making a seamless and direct transition from invoice -> purchase order
- ◆ Configurable invoice formats:
  - ○ if an invoice comes in and it needs to be corrected to continue to the purchase order process, the system will remember the modified invoice, to avoid repetitive correction
- ◆ Flagging System:
  - ○ Common bulk orders are what the autofilled invoice fields component is made for
  - ○ Less occurring invoices are flagged for human review

Major Functional Components Diagram

Invoice

Autofill Invoice Fields

Flagging System

High Activity

(Common Orders)

Cannot autofill or failed to satisfy purchase order

Low Activity

Sent to human review

Utilize (corrected) info in autofill

Correction to recognize invoice orders

Saved to memory

Continue process of invoice -> purchase order

Purchase Order

Real World Product vs Prototype Table

[Insert Table]

Risks

- ◆ [Customer & End User]
- ◆ [Technical]
- ◆ [Security]
- ◆ [Legal]

Glossary

- Invoice: a list of goods sent or services provided, with a statement of the sum due for these; a bill.
- {Placeholder}

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