

Intelligent Document Processing for Hawaii State Judiciary's Criminal Justice Research Institute (CJRI)

Executive Summary

The Hawaii State Judiciary's Criminal Justice Research Institute (CJRI) partnered with Cloudwick to implement the Amorphic Intelligent Document Processing (IDP) Solution, harnessing the power of generative AI to transform case document management and analysis. With critical information embedded in unstructured text fields within its case management system, CJRI deployed Amorphic IDP to automate the extraction, structuring, and analysis of specific data points. The solution enabled CJRI to efficiently process complaint documents, providing essential insights and empowering faster, data-informed decisions in judiciary processes

Business Objective

CJRI's objective was to unlock vital information hidden within freeform text fields in its case management system. While structured data highlighted general case details, specifics—such as the exact type and quantity of substances involved in drug related offenses—were only available in unstructured text. Cloudwick's Amorphic IDP Solution provided the capability to automatically extract, organize, and make this information accessible for analysis, supporting CJRI's mission to drive informed judicial decisions and policy recommendation

Challenges

1

Inaccessible Information in Freeform Text

Critical case details, like specific drug types and quantities, were locked within unstructured text fields in CJRI's case management system, making it challenging to retrieve and analyze these insights effectively

2

Ensuring Consistency Across Departments

Variations in documentation and terminology complicated data sharing across departments. Amorphic enabled CJRI to standardize and aggregate data across disparate sources, making comprehensive trend analyzes possible

3

Extracting Complex Data Accurately

Generative AI was essential in identifying and structuring complex data points buried within lengthy, unstructured text, such as offense codes, substance amounts, and contextual details around each case.

4

Efficiently Analyzing Key Data

With the LLM's advanced contextual capabilities, CJRI could overcome limitations of traditional search methods, retrieving data accurately and enabling faster, more reliable analysis

Solutions

The Amorphic IDP Solution addressed CJRI's challenges by transforming unstructured data into structured, actionable insights:



AI-Powered Document Processing and Extraction

Using Anthropic Claude 3.5 Sonnet from Amazon Bedrock, Amorphic IDP processed the complaint documents related to marijuana offenses, leveraging generative AI to interpret, extract, and structure complex information.



Prompt Engineering for Precise Data Extraction

Tailored prompts guided the model to identify key fields accurately, such as specific drug types, quantities, and relevant legal codes, enabling CJRI to retrieve essential data quickly and reliably.



High-Accuracy Data Validation

Manual review of a subset demonstrated a 98% accuracy rate, successfully showcasing the reliability of the LLM in transforming unstructured text into structured data.



Interactive Dashboards for Data Analysis

The structured exports enabled CJRI to analyze data trends within an interactive dashboard, complete with visual summaries and downloadable reports.



Cost-Efficiency with Scalable Processing

Future processing costs were estimated at \$1 per 20 documents — demonstrating the scalability and cost-effectiveness of the Amorphic platform.

Implementation Details

The Amorphic IDP Solution addressed CJRI's challenges by transforming unstructured data into structured, actionable insights:

Document Stores and Prompt Testing

Within Amorphic, CJRI utilized a dedicated document store to experiment with prompts, refining data extraction accuracy and adapting to new document types.

Advanced Data Structuring with Generative AI

The Amorphic IDP transformed complex text fields into structured, queryable data, thanks to the nuanced interpretation capabilities of generative AI.

Flexible Data Retrieval and Visualization

Processed data was organized into relational tables, easily searchable and reviewable, with each document's results accessible for individual or bulk analysis

Dashboards and Analytics



Amazon Quick Sight Interactive Dashboards

The bulk-exported data was visualized in dashboards that highlighted key metrics like offense timelines, distribution trends, and possession quantities, allowing CJRI to gain valuable insights from unstructured data



Downloadable Reports for Stakeholders

Customized reports provided CJRI with accessible summaries, supporting informed discussions and data-driven policy analysis

Outcomes and Benefit

Cloudwick's Amorphic IDP Solution, driven by generative AI, delivered transformative improvements in data accessibility and efficiency for CJRI.



Unlocking Critical Data with Generative AI

A By transforming unstructured freeform text into structured data, Amorphic IDP gave CJRI fast, accurate access to essential case details, supporting more timely judicial insights



High Accuracy and Data Reliability

A 98% accuracy rate in data validation demonstrated the precision and reliability of the extraction process, allowing CJRI to confidently use the data in decision-making



Enhanced Data Retrieval and Analysis

Automation minimized the need for manual data handling, allowing CJRI to focus on analysis and strategic decision-making.



Scalable and Cost-Effective Processing

The solution's affordable processing costs highlighted its scalability, ensuring CJRI could continue to analyze documents within budget constraints.



Insightful Data Visualization and Reporting

Interactive dashboards and downloadable reports provided CJRI with the ability to visualize trends and patterns, supporting data-driven discussions and enhancing the judiciary's operational efficiency

AWS Services Used

The Amorphic solution is deeply integrated with the AWS ecosystem, leveraging over 60 native AWS services. Some of the key AWS services used include:

Amazon S3, AWS Glue, Amazon Athena, Amazon QuickSight and AWS Bedrock. In addition to these, the Amorphic platform utilizes a wide range of AWS services across categories like compute (Lambda, Step Functions), analytics (Redshift, Kinesis), security (IAM, KMS, CloudTrail), and monitoring (CloudWatch, X-Ray), ensuring a robust and enterprise-grade architecture.

Conclusion

Through the power of generative AI, Cloudwick's Amorphic IDP Solution enabled CJRI to unlock, structure, and analyze critical information hidden within unstructured text fields in their case management system. By transforming this data into accessible Insights, Amorphic IDP empowered CJRI to make timely, data-informed decisions that support judicial processes and drive effective criminal justice reforms in Hawaii

Next Steps

Start small, achieve quick wins and build a scalable data foundation powered by AI and automation. Contact Cloudwick at sales@cloudwick.com for a demo.