

Data & AI | White Paper



Modernizing Mission-Critical Workloads with Intelligent Document Processing (IDP)

Executive Overview

Organizations that operate in mission-critical industries—including healthcare providers, regional and national banks, credit unions, federal reserve banks, agricultural lenders and large-scale technology firms—face rising regulatory obligations, escalating customer expectations, aging infrastructure and relentless pressure to operate faster, more securely and more cost-effectively.

Amid this challenging environment, intelligent document processing (IDP) has emerged as a transformative solution that addresses systemic inefficiencies, bolsters compliance and creates a future-ready platform for innovation.

This white paper aims to provide executive leadership, technology strategists and operations leaders with an in-depth look at the value of architecting an IDP pipeline for mission-critical workloads. It draws from Calian's extensive market analysis and industry research to present a compelling case for IDP as a strategic enabler of enterprise resilience and performance.

The Converging Challenges

Despite their sectoral differences, mission-critical organizations are confronting converging challenges:



Rising Regulatory Complexity from agencies such as CFPB, OCC, HIPAA, FFIEC and CMS.



Eroding Margins and Rising Labour Costs driving the need for operational efficiency.



Increased Cyber Risk and Data Privacy Obligations placing a premium on secure workflows.



Legacy IT Systems impeding innovation and integration.



Customer/Member/Patient Demand for seamless, personalized digital experiences.

In this environment, manual document processing is no longer tenable. Errors, delays and fragmentation introduce unacceptable risk to operations that must be executed with precision and speed.

In this type of scenario, the following priorities should guide client investments:

Digital Transformation:

Rapid migration from manual to automated, digital-first operations.

Customer/Patient/Member Experience:

Delivering speed, transparency and personalization at every touchpoint.

Operational Efficiency:

Streamlining processes to reduce costs, minimize rework and improve service throughput.

Data-Driven Decision Making:

Unlocking the potential of unstructured data to power analytics and AI.

Regulatory Compliance:

Establishing auditable, traceable and defensible data/document workflows.

Scalability & Agility:

Building platforms that support growth, acquisition and continuous change.

These priorities align directly with the capabilities of a well-architected IDP pipeline.

Let's begin with what IDP is.

IDP refers to a technology stack that uses AI, machine learning, natural language processing (NLP) and digital process automation (DPA) to intelligently capture, classify, extract, validate and route unstructured and semi-structured data from documents to downstream automated workflows. Its components include:



- ➔ **Omni-channel Ingestion:**
Support for scanned documents, PDFs, emails, portals and mobile uploads.
- ➔ **AI-Based Classification:**
Document type recognition using trained ML models.
- ➔ **Data Extraction:**
NLP and computer vision to extract text, tables, entities and handwritten notes.
- ➔ **Validation Rules:**
Business logic to validate extracted data against internal and external sources.
- ➔ **Workflow Integration:**
Secure API-based integration with downstream systems (EHRs, CRMs, ERPs, LOS platforms).

While optical character Recognition (OCR) simply converts printed text to digital, IDP goes further. It understands context, validates data, enables decisions and integrates into enterprise workflows.

IDP generates quantifiable ROI; the implementations consistently deliver measurable benefits across industries:

30–50%

Labour Savings¹

Automated processing reduces need for manual data entry.

40–70%

Faster Processing²

Shorter cycle times for loans, patient intake, claims, onboarding.



Significant Accuracy Gains³

Reduction in manual errors improves data reliability.

12–24

Month Payback⁴

Most implementations achieve break-even within two years.⁵

Beyond these numbers, IDP contributes to tangible benefits such as:

1

Risk Mitigation: Fewer compliance violations due to built-in traceability.

2

Staff Empowerment: Employees shift from data entry to higher-value analysis.

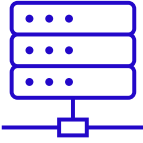


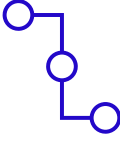
3

Improved Customer Experience: Speed and transparency drive satisfaction.

4

Innovation Enablement: Structured data becomes a resource for analytics, AI and personalization.

How Intelligent Document Processing (IDP) Compares against Optical Character Recognition (OCR)

Conventional OCR	Capability	Intelligent Document Processing (IDP)
Extracts raw text only; limited understanding of layout, structure or meaning.	 Data Extraction	Uses AI/ML and NLP to recognize document structure (tables, key-values, entities) and apply context to improve accuracy.
Requires manual rules/templates or custom code to identify document type; brittle to format changes.	 Document Classification	Automatically classifies document types with ML, enabling routing and workflow automation by type.
Static rule-based approach; improvements need manual updates and re-deployment.	 Adaptive Learning	Learns from feedback (supervised ML/human-in-the-loop), improving precision and recall over time.
Typically stops at text extraction; downstream validation and process steps are manual.	 End-to-End Automation	Validates and enriches data, applies business rules, triggers workflows and orchestrates processes to reduce errors and boost productivity.

Use Cases

Here are a few different use cases clients should consider while thinking about strategic investments that can help their enterprise be more competitive.

Financial Institutions



Loan Origination: Automate income verification, identity checks and application intake.

KYC/AML Compliance: Extract, verify and route sensitive data for audit-ready compliance.

Back Office Reconciliation: Streamline processing of cheques, receipts, statements.

Credit Unions



Member Onboarding: Digital onboarding with ID verification and auto-populated forms.

Loan Servicing: Automated updates and documentation across lending lifecycle.

Healthcare Providers



Patient Intake: Eliminate paperwork delays; integrate patient-provided data into EHRs.

Claims Processing: Faster, cleaner claim submissions with fewer denials.

Clinical Documentation: Extract insights for care pathways, research and reporting.

Federal Reserve Banks & Government



Payment and Disbursement Ops: Secure, automated handling of forms and validations.

Public Policy and Research: Turn scanned archives and data into searchable assets.

Agricultural Lenders



Loan Application Processing: Automate verification, borrower background, financials.

Documented Risk Assessments: Extract variables for analysis in actuarial models.

Let's take a deep dive into the use cases:

Patient Referral Management

Efficiently managing patient referrals is critical to reducing errors, eliminating bottlenecks and enhancing healthcare workflows. By streamlining these processes, organizations can improve both patient care and operational productivity.

- 1 Input Handling:** Seamlessly process faxes and paper-based referrals with precision.
- 2 Data Extraction:** Accurately extract key details such as referral type, physician information and accompanying notes.
- 3 Missing Information Retrieval:** Proactively identify incomplete data and request missing details via calls, emails or faxes. Update referral records promptly as new information becomes available.
- 4 Practitioner Submission:** Ensure the receiving practitioner has complete and accurate referral information.
- 5 Workflow Automation:** Automate critical actions such as appointment scheduling and patient intake to create a smoother, more efficient process.

Streamlining Freight Invoice Management

Manually processing freight invoices is both time-consuming and error-prone, often resulting in inefficiencies and inconsistencies when integrating with ERP and TMS systems. Automating this workflow ensures greater accuracy, consistency and efficiency.

Document Ingestion	Document Classification	Data Extraction	Validation & Cross-Referencing	Exception Handling	Integration & Automation
Automatically collect documents from diverse sources, including email inboxes, FTP servers and cloud storage.	Leverage AI to classify documents based on their layout, content and metadata.	Use OCR and NLP to extract structured data, even from handwritten or scanned documents.	Validate extracted data by cross-referencing against ERP or TMS systems, identifying and flagging discrepancies.	Efficiently route flagged documents to human reviewers with detailed contextual notes to expedite resolution.	Automatically synchronize validated data with ERP, accounting and compliance systems, ensuring seamless updates and improved workflow management.

Automating Purchase Order and Invoice Processing

Manual processing of purchase orders (POs) and invoices often leads to delays, errors and tracking challenges, particularly when systems lack proper integration. Automating these workflows enhances accuracy, efficiency and transparency.

1

Document Ingestion: Automatically organize incoming POs and invoices from emails, folders and FTP servers.

2

Document Classification: Utilize AI to categorize documents based on structure and content for enhanced organization.

3

Data Extraction: Extract structured data using OCR and NLP technology, accommodating diverse formats and languages.

4

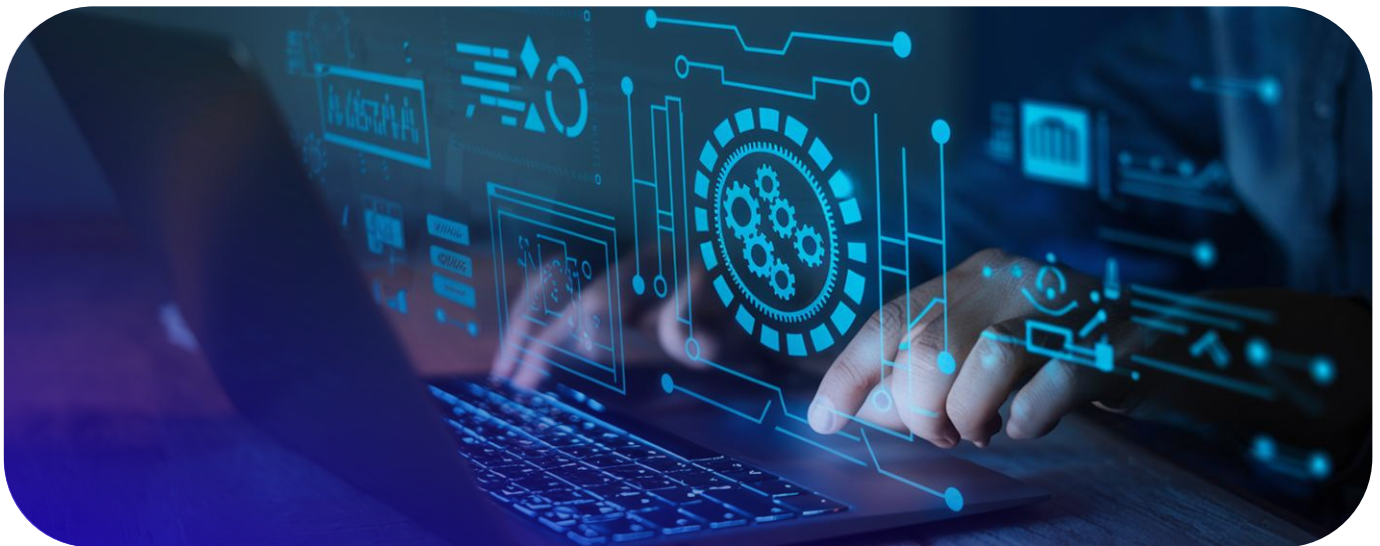
Validation & Matching: Cross-reference extracted data with ERP systems to validate quantities, pricing and terms, ensuring compliance and accuracy.

5

Exception Handling: Identify and route discrepancies to procurement or finance teams with contextual notes to facilitate resolution.

6

Integration: Automatically update ERP and financial systems with validated data, triggering downstream workflows such as payments or inventory updates.



Like every technology, IDP has its own challenges. Let's examine some of them:



Integration with Legacy Systems

Many mission-critical organizations still operate aging IT systems. Calian addresses this through modular architecture, connectors and middleware that reduce friction and lower migration risk.



Vendor Overload

With many point solutions on the market, Calian's value lies in combining best-of-breed technology with deep integration, domain expertise and one accountable partner.



Change Management

Technology alone isn't enough. Calian's end-to-end adoption services include training, stakeholder engagement and workflow redesign to maximize ROI.

For 25 years, Calian has been a partner to clients, helping them manage their IDP challenges



Deep Sector Expertise

Calian brings decades of experience in healthcare, finance, government and critical infrastructure—ensuring solutions are built for the specific demands of your domain.



Full Lifecycle Services

We manage the full journey: assessment, design, deployment, adoption and ongoing optimization.



Proven Frameworks

Our IDP architecture is secure, scalable, modular and cloud ready. It includes pre-built accelerators for compliance workflows and regulatory audits.



Trusted Partnership

Our clients see us as more than a vendor. We are strategic partners in resilience, innovation and transformation.

The Path Forward

Mission-critical workloads demand more than incremental improvement. They demand transformative change. Intelligent document processing is a foundational step toward creating secure, scalable and insight-rich operations that meet today's needs and tomorrow's ambitions.

Organizations that begin architecting their IDP pipeline now will be better positioned to:

- 1 Withstand regulatory audits and reduce compliance overhead
- 2 Improve accuracy and throughput of mission-critical operations
- 3 Empower staff and reduce burnout
- 4 Fuel data-driven innovation
- 5 Outpace digital-first competitors

Calian IT & Cyber Solutions

Contact Us

Let's build the future of mission-critical operations—starting with your documents.

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For over 40 years, Calian has delivered mission-critical solutions when failure is not an option. Trusted worldwide, we empower organizations in critical industries to overcome obstacles, manage risks and drive progress. By combining the expertise of our people, proven industry insight, cutting-edge technology, bold innovation and global reach, we deliver tailored solutions that solve complex challenges. Headquartered in Ottawa, Canada, with over 5,000 people around the world, Calian's solutions protect lives, strengthen security, foster global connectivity and drive economic progress, making a lasting impact where and when it matters most.

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