



# Re(AI)maging<sup>TM</sup> Intelligent Document Processing with GenAI



Enterprises today generate data at unprecedented rates, and this growth will only accelerate. According to IDC, the Global Datasphere will reach **175 zettabytes by 2025**, expanding at a Compound Annual Growth Rate (CAGR) of over 25% in the last five years. Even more striking, over 80% of this data will be unstructured, presenting significant challenges, particularly in regulated sectors such as banking, financial services, and healthcare, where unlocking actionable insights from data is essential yet difficult.

Despite millions spent on storing unstructured data, only **0.5% is currently harnessed to drive meaningful outcomes**. As a result, operational costs increase without a corresponding increase in value. Furthermore, with **30% of the Global Datasphere expected to be real-time data**, enterprises need advanced analytical technologies to capitalize on this data.

Currently, global enterprises still rely on manual data entry and processing methods. A Goldman Sachs report reveals that organizations spend close to **\$2.7 trillion annually on manual, paper-based invoice processing** — an approach that not only drives up costs but also results in lower accuracy, limited scalability, and extended processing times.

### Current State of Document Processing

#### Exponential data growth

175 Zettabytes estimated Global Datasphere by 2025, growing at 15%+ CAGR since last 5 years<sup>1</sup>

#### High presence of unstructured data

80%+ data generated by enterprises globally will be unstructured by 2025<sup>1</sup>; only ~0.5% of this data is used for meaningful outcomes<sup>2</sup>

#### Heavy reliance on dynamic data

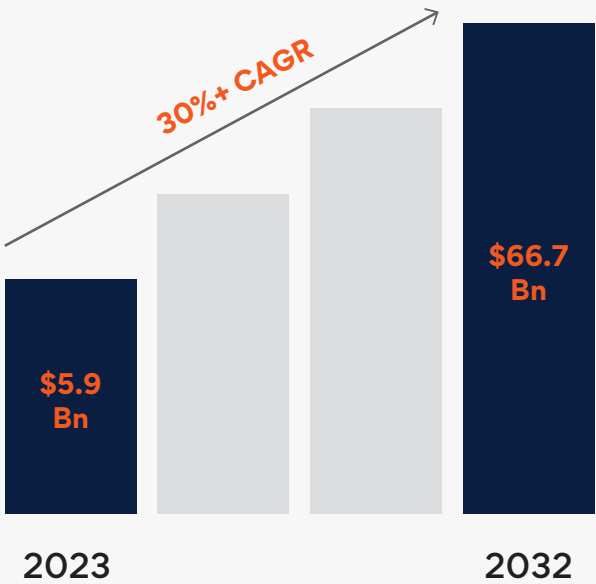
30% data within Global Datasphere is expected to be real-time in nature, making it complex to leverage this data meaningfully<sup>3</sup>

#### High focus on manual data handling

**\$2.7 Tn** costs (direct + indirect) incurred by global businesses on manual, paper-based invoice processing<sup>4</sup>

Source: <sup>1</sup>IDC / <sup>2</sup>Deep Talk / <sup>3</sup>IDC / <sup>4</sup>Goldman Sachs Report

### IDP Market Size (2023-2032)



Source: Fortune Business Insights IDP Report

Given the current state of document processing, it is crucial for enterprises to leverage automated, AI-powered techniques. Consequently, many are turning to solutions, such as, Intelligent Document Processing (IDP), a rapidly expanding market projected to grow at over **30% CAGR, reaching \$66.7 billion by 2032**.

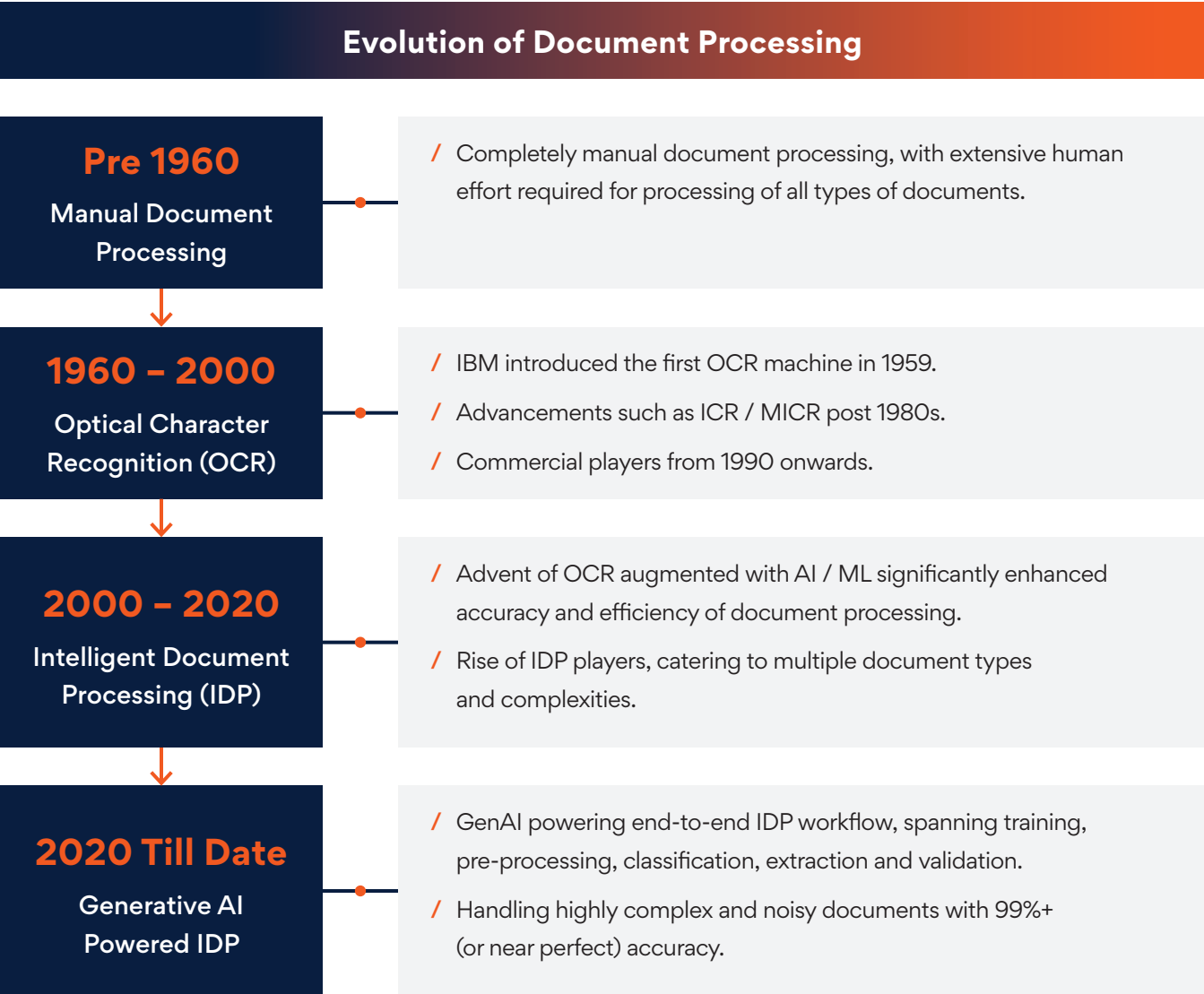
This blog explores the evolution of document processing, the factors driving change, and the transformative role of Generative AI (GenAI) here.

# Evolution of Document Processing Over Decades

The document processing industry has evolved significantly over the decades, especially with advances in AI and ML.

Before the 1960s, document processing was entirely manual, requiring extensive human labor to parse and extract data. A major breakthrough came in 1959 when IBM introduced Optical Character Recognition (OCR) technology, which soon became the industry standard. In the 1980s, Intelligent Character Recognition (ICR) enhanced OCR by deciphering handwritten text, and the banking industry led one of OCR's first applications with Magnetic Ink Character Recognition (MICR) for faster check processing.

The 1990s saw the rise of commercial OCR software from companies, such as, ABBYY and Adobe, expanding its accessibility across industries. In the 2000s, AI / ML further advanced OCR, paving the way for Intelligent Document Processing (IDP). IDP offered greater accuracy, cost-effectiveness, and versatility, handling a broader range of document types, including unstructured and semi-structured data.



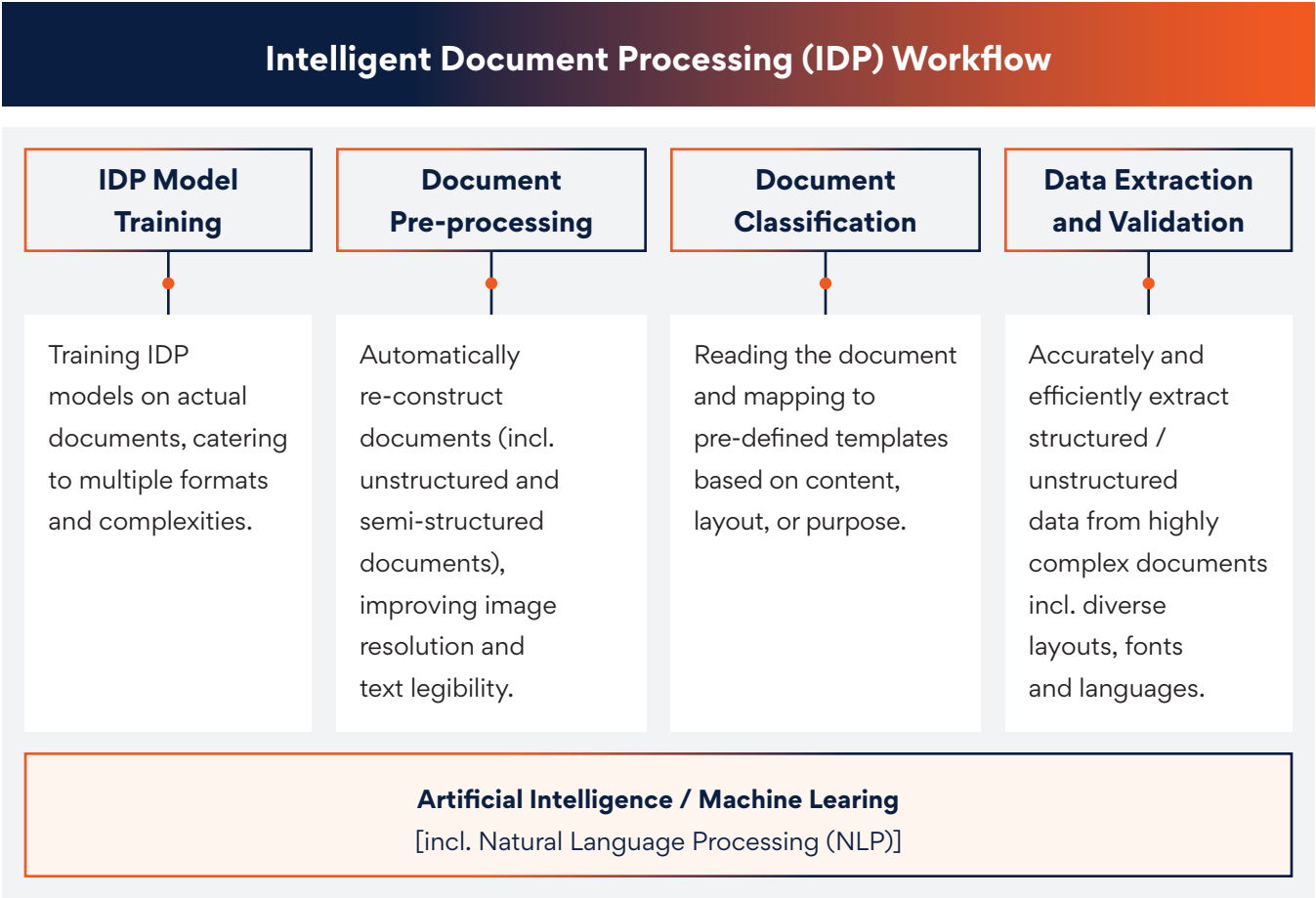
**Note:** ICR: Intelligent Character Recognition (for handwriting recognition);  
MICR: Magnetic Ink Character Recognition (relevant for banking industry)

With the advent of GenAI, IDP has taken another leap forward. GenAI now powers the entire IDP workflow — from training and pre-processing to data extraction and validation — achieving remarkable accuracy.

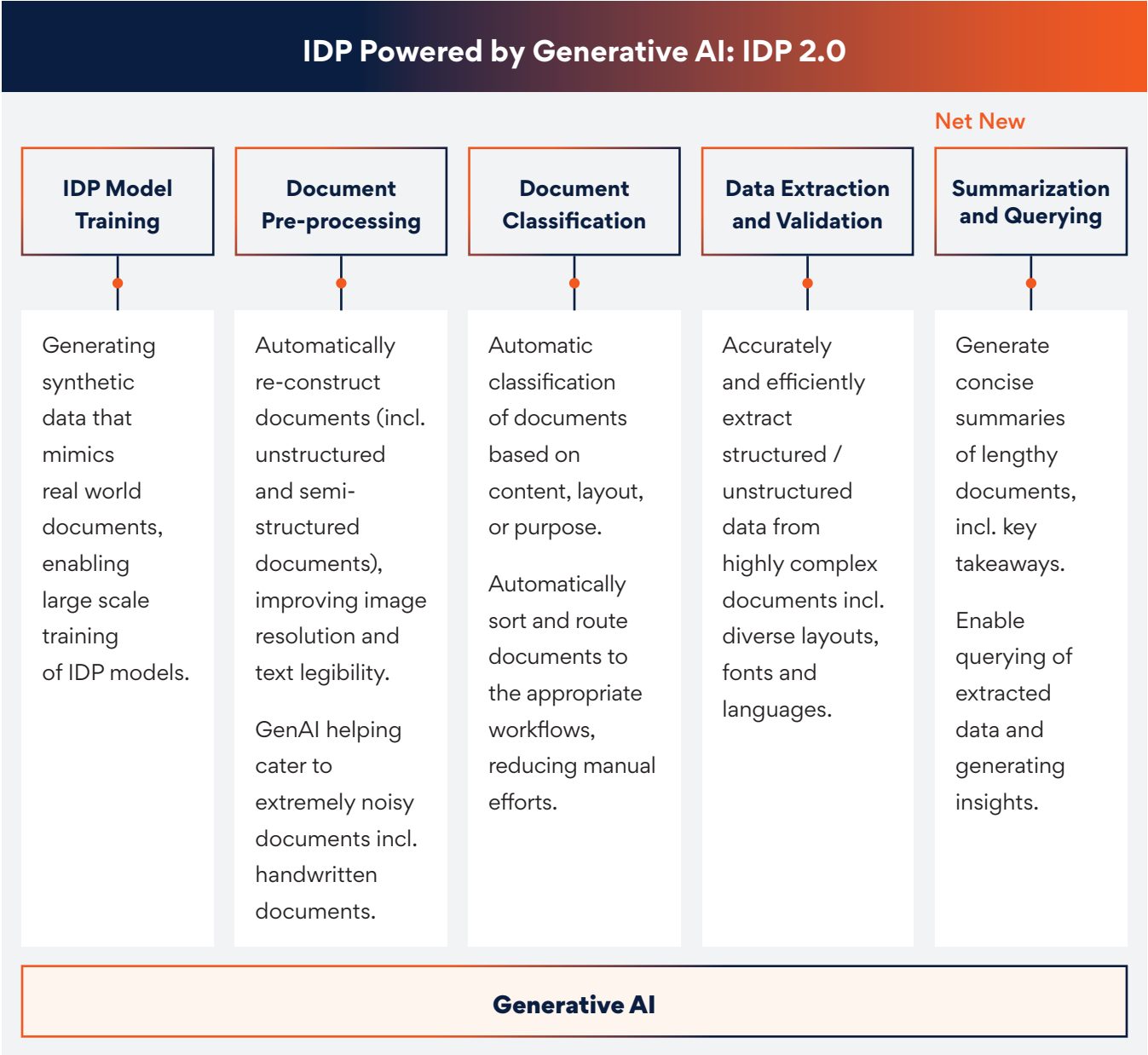
The following sections dive deeper into how GenAI drives IDP innovation.

## IDP and GenAI Infusion

The rise of IDP brought AI / ML into every stage of document processing — from model training and pre-processing to document classification, data extraction, and validation. This shift led to higher data extraction accuracy, faster processing times, and the ability to handle more complex documents compared to traditional OCR.



With GenAI now enhancing IDP, there are even greater advancements across the entire value chain. GenAI not only augments existing capabilities but also introduces new ones, such as document summarization and querying, which were previously beyond reach. This drives additional value for enterprises, making IDP more powerful and versatile.



# Case in Point: IDP within BFSI Industry

The Banking, Financial Services, and Insurance (BFSI) industry, being highly document-intensive, relies heavily on document processing to serve customers. According to a Zinnov report, BFSI leads in IDP adoption, with over 70% of Fortune 250 enterprises already investing in this technology.

## BFSI Industry Value Chain / IDP Use Cases and Documents Processed

|                              |   |                                   |                            |                                  | IDP Applicability                     |
|------------------------------|---|-----------------------------------|----------------------------|----------------------------------|---------------------------------------|
| Client Onboarding            | Lending   | Claims Management                 | Client Servicing           | Regulatory Compliance            | Underwriting and Pricing              |
| Know Your Customer (KYC)     | Loan Origination  | Claim Intake                      | Incident Case Management   | Fraud Detection                  | Underwriting Workbench                |
| Nominee Addition             | Loan Underwriting   | Adjudication                      | Self-service Portal        | Compliance Audit                 | Risk Analysis and Referral            |
| Account Maintenance          | Loan Processing   | Claim Management / Loss Adjusting | Client Grievance Platform  | Regulatory Reporting             | Product Suggestion                    |
| Product / Service Management | Collateral Management   | Claim Settlement                  | Loyalty / Reward Program   | Data Privacy                     | Quote Proposal / Application          |
| Card Issuance                | Loan Securitization   | Third-party Administration        | Customer 360°              | Investor Reporting               | Inspection and Medical Management     |
| Illustrative Documents       | / ID Proofs:<br>Driver's License, Proof of Address, Utility Bills   | / Claim Form                      | / Grievance Details        | / Regulatory Reporting Documents | / Credit Reports                      |
|                              | / Letter of Credit  | / Incident Reports                | / Invoices                 | / Financial Reporting            | / Bank Statements                     |
|                              | / Bill of Lading  | / Certificate from Authorities    | / Nominee Form             | / Risk and Audit Documents       | / Claims History                      |
|                              | / KYC Details:<br>KYC Form, Employment Details, Income Verification | / Diagnostics Reports             | / Contracts                | / Handling PII Data              | / Agreements                          |
|                              | / Business Registration and Licenses                                | / Hospital / Service Bills        | / Asset Transfer Documents |                                  | / W-2 Forms                           |
|                              | / Business Compliance Documents                                     | / Repair Bills / Payment Receipts |                            |                                  | / Previous Insurance Policy Documents |
|                              | / Tax Returns Forms   |                                   |                            |                                  | / Mortgage Statement                  |
|                              | / Bank Cheques  |                                   |                            |                                  |                                       |



One high-impact IDP use case in BFSI is client onboarding / KYC, which involves processing a wide range of documents. The effectiveness of automating this process directly impacts customer and employee experience. Below is an overview of the current manual process and how IDP transforms it:

**Manual Process:** Onboarding involves multiple steps, including verifying customer ID, address, photo proof, signature, and financial documents. This process is still largely manual, requiring teams to parse through documents, enter data into systems, and verify details against government databases like Social Security Administration (SSA) database, Department of Motor Vehicles (DMV) database, and Internal Revenue Service (IRS) database, among others.

|  |  |
|--|--|
| <div>1</div> <div>Documents Submission</div>         | <p><b>Customer submits requisite documents for KYC incl. physical documents, scanned documents / PDF, handwritten documents, etc.</b></p> <p><b>Identity related documents:</b> ID proof, Address proof, Photo proof, Signature verification.</p> <p><b>Risk related documents:</b> Source of income / wealth, Occupation proof, Purpose of account, Financial statements, Banking references.</p> |
| <div>2</div> <div>Identity Verification</div>        | <p><b>Identity related documents are validated against the list of standard KYC / ID documents required.</b></p> <p><b>Documents verified against standard government databases:</b> SSN on SSA database, Driver's license on DMV database, Taxpayer ID on IRS database.</p>   |
| <div>3</div> <div>Screening and Due Diligence</div>  | <p><b>Applicant is scrutinized against multiple government and global databases:</b> Economic / trade sanctions on OFAC or PEP database, FATCA regulation breach on FATCA database, Adverse media monitoring through search engines.</p> <p><b>Post clearance of above checks, application is sent for risk assessment.</b></p>  |
| <div>4</div> <div>Risk Assessment</div>              | <p><b>Risk related documents are validated against the list of standard KYC / Risk documents required.</b></p> <p><b>Risk score is assigned to the applicant: High Risk / Medium Risk:</b> Additional queries and documents may be requested as per policy.</p> <p><b>Low Risk:</b> Moved to the next step.</p>  |
| <div>5</div> <div>Final Decision and Reporting</div> | <p><b>Based on the verification process, screening and due diligence and risk assessment, summary report is prepared and final decision to approve or reject is made.</b></p> <p><b>Accept:</b> New account activation process is initiated.</p> <p><b>Reject:</b> Communication sent to customer with reason.</p>   |

**Note:** SSA: Social Security Administration; DMV: Department of Motor Vehicles; IRS: Internal Revenue Service; OFAC: Office of Foreign Assets; PEP: Politically Exposed Persons.

**Automated Workflow:** IDP automates document ingestion and data extraction, entering the relevant details into internal apps. Robotic Process Automation (RPA) bots verify this data against government databases for accuracy. The process can then be summarized, with a final 'Approve / Reject' decision. For low and medium-risk cases, straight-through processing allows bots to update the status and notify the customer. In high-risk cases, bots recommend a decision, and a human agent makes the final call.

**Key Outcomes:** This automation reduces the KYC cycle time by over 60%, lowers costs by more than 4X, and achieves data extraction accuracy rates of 90% to 95%.





Below is a real-world case study that Persistent implemented for a Fortune 500 bank, who struggled to onboard customers at scale.

Persistent Case Study: Customer Onboarding / KYC Automation Using IDP

| Client: Leading Fortune 500 Bank, Headquartered in the US   |   |   |
|---|---|---|
| Business Challenges   | Persistent Solutions  | Key Outcomes  |
| <ul style="list-style-type: none"><li>/ KYC processing at scale for increasing customer base, accommodating volume spikes.</li><li>/ Seamless integration with the Core Banking Systems (CBS).</li><li>/ Enhance customer experience, and reduce operational costs.</li></ul> | <ul style="list-style-type: none"><li>/ Intelligent Document Processing (IDP) solution, powered by RPA to automate end-to-end KYC workflow.</li><li>/ Automate receipt of documents, processing, data extraction, validation, exception handling and report generation.</li></ul> | <ul style="list-style-type: none"><li>/ 95%+ Accuracy of data extraction.</li><li>/ 75% Reduction in KYC cycle time.</li><li>/ 100% Error-free workflow.</li><li>/ 2X Improvement in Customer Experience (CX).</li><li>/ Seamless integration with enterprise applications incl. CBS.</li></ul> |

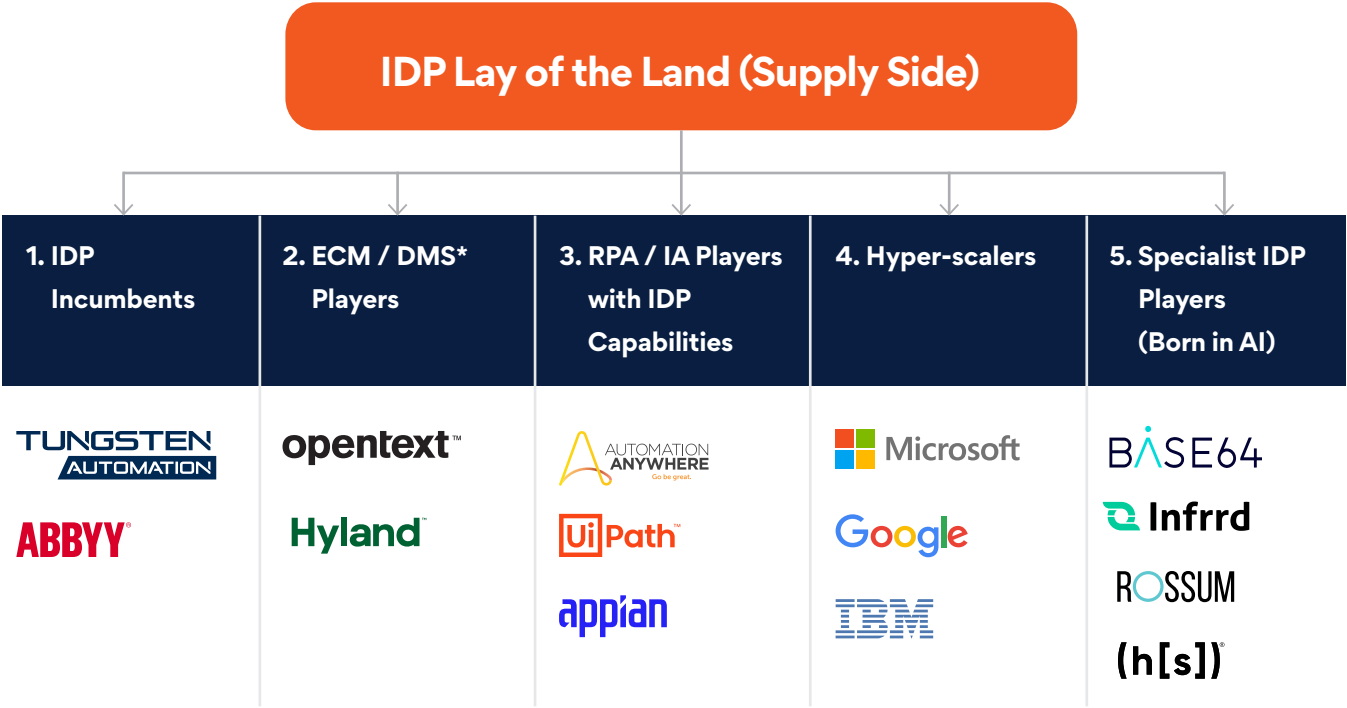


# Supply Side View: IDP Lay of the Land

The IDP space is dynamic, with numerous players offering varied solutions. Established players, such as Tungsten Automation (formerly Kofax) and ABBYY have been at the forefront for over three decades, while hyperscalers such as Microsoft, Google, and IBM have integrated AI-powered IDP tools into their portfolios. Enterprise Content Management (ECM) providers, such as Opentext and Hyland, have also expanded into IDP through acquisitions, with Opentext acquiring over 40 companies in the past 25 years.

RPA / Hyperautomation players, such as UiPath, Automation Anywhere, and Appian, have integrated IDP into their offerings, making them key players in the space due to their market presence and synergies with RPA.

Moreover, there is a surge of AI-born startups focused solely on IDP, with over 400 platforms emerging in the last decade. Many of these are now integrating GenAI for higher accuracy and scalability for complex use cases. In addition, players like Base64.ai are ‘Born in GenAI’ which have pre-built models for complex documents and template free processing.



**Note:** \*ECM: Enterprise Content Management / DMS: Document Management Systems. Tungsten automation was formerly Kofax (re-branded in Jan 2024).

With so many options, choosing the right IDP provider can be challenging. While typical considerations, such as integration, scalability, and pricing remain crucial, GenAI capabilities have emerged as a key differentiator. Here is what to focus on when selecting an IDP partner:

## Key Considerations to Select the Best-fit IDP Tool



### Action and Insights

Beyond extraction, GenAI enables querying and summarization. For instance, HR professionals can extract data from resumes and automatically summarize key points for shortlisting candidates.



### Security and Compliance:

It is essential to select an IDP solution with robust security, compliance, and privacy features, ensuring adherence to regulations, such as SOC 2, GDPR, HIPAA, and ISO 27001.



### Range of Documents

Ensure the tool can handle a variety of unstructured and semi-structured documents, including handwritten text, complex tables, and multi-page formats. GenAI excels in managing these complexities.



### Multi-Modality Support

IDP tools should support images, audio, and video to handle future use cases. GenAI players are equipped to process multi-modal formats effectively.



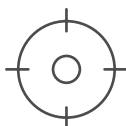
### Pre-Trained AI Models

Choose IDP platforms that offer pre-trained AI models for common document types and use cases, with the flexibility to build custom models with minimal coding.



### Extraction Speed

GenAI accelerates document processing and training, enabling quick outcomes, even without templates.



### Extraction Accuracy

Accuracy is critical and the IDP tool should guarantee at least 90%+ accuracy for the documents in question. GenAI-powered IDP typically guarantee 99%+ accuracy, ensuring seamless automation for customers.

In conclusion, AI-powered IDP is being increasingly augmented by GenAI, transforming how enterprises manage and process vast volumes of unstructured data. From its roots in OCR to the current GenAI-enhanced capabilities, IDP is streamlining workflows across industries, enabling faster, more accurate, and cost-effective document processing. As businesses navigate a crowded landscape of IDP providers, the ability to handle complex, multi-modal documents with high accuracy, speed, and security has become a key differentiator. With the rapid adoption of GenAI, enterprises are now poised to unlock new levels of efficiency and value, ensuring they stay competitive in a data-driven future.



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With over 15 years in Strategy Consulting, Nischay excels in securing and delivering large consulting deals. He collaborates with C-Suite executives and senior leaders from top enterprises and automation platform providers globally, driving growth and innovation.



# Re(AI)maging<sup>TM</sup> the World



## About Persistent

Persistent Systems (BSE & NSE: PERSISTENT) is a global services and solutions company delivering Digital Engineering and Enterprise Modernization to businesses across industries. With over 23,200 employees located in 19 countries, the Company is committed to innovation and client success. Persistent offers a comprehensive suite of services, including AI-enabled software engineering, product development, data and analytics, CX transformation, cloud computing, and intelligent automation. The Company has been recognized as the “Most Promising Company” of the Year by CNBC-TV18 at the 2023 India Business Leader Awards. Persistent has achieved carbon neutrality, reinforcing its commitment to sustainability and responsible business practices. As a participant of the United Nations Global Compact, the Company is committed to aligning strategies and operations with universal principles on human rights, labor, environment, and anti-corruption, as well as take actions that advance societal goals. With 327% growth in brand value since 2020, Persistent is the fastest-growing IT services brand in the 2024 Brand Finance India 100 Report.

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