Intelligent Document Processing (IDP) Playbook

June 2021
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Objective

The aim of the IDP Playbook is to empower enterprises at various stages of their digital journeys with insights on the role and impact of IDP in digital journeys and to help develop strategies to improve outcomes from their IDP investments.
01

Introduction to automation

- Evolving into a digital-first business
- Key levers for business resiliency
- Challenges around unstructured data
- Emergence of IDP
- Key components of intelligent automation
Evolving into a digital-first business is becoming increasingly important for organizations to remain resilient and competitive.

### Drivers of change

#### Legacy business
- The need to keep pace with evolving customer expectations and business situations in a digital-first world
- Ensuring business continuity during a pandemic (e.g., COVID-19)
- Saturation of benefits from traditional processes such as shared services, offshore labor arbitrage, and Enterprise Resource Planning (ERP)
- Challenges on account of increasing administrative expenses due to expanding coverage and regulatory stringency
- The need to improve employee engagement and reduce attrition

#### Digital-first business
- Reimagine processes
- Eliminate manual work
- Enhance stakeholder experience
- Focus on business metrics
- Data and analytics
- Artificial intelligence (ML, NLP, etc.)
- Intelligent Document Processing (IDP)
- RPA and process mining
- Cloud/SaaS
- Design thinking

### Value

#### Levers
- Cost reduction
- Efficient process
- SLA compliance
- Employee productivity
- Shared services
- Labor arbitrage
- Lean Six Sigma
- Legacy tools and wrappers
- Manual processes

#### Levers
- Reimagine processes
- Eliminate manual work
- Enhance stakeholder experience
- Focus on business metrics
- Data and analytics
- Artificial intelligence (ML, NLP, etc.)
- Intelligent Document Processing (IDP)
- RPA and process mining
- Cloud/SaaS
- Design thinking
As enterprises move along this journey, data availability and digitalization have been identified as key digital levers to ensure business resiliency

Key levers for business resiliency

1. Data availability, cleanliness, and visibility
2. Spending / cost levels
3. Digitalization/automation
4. Risk planning and mitigation
5. Service level flexibility
However, while digital-first enterprises need to be data driven, over 80% of enterprise data is locked within unstructured formats and is unavailable for downstream applications.
Enterprises face multiple challenges while trying to unlock meaning from unstructured data

**Human error leads to poor data quality**
Manual conversion of data from unstructured to digital formats leads to human error, lower accuracy, and poor-quality data.

**Inability to leverage data downstream**
Poor quality and outdated data can lead to broken processes downstream. It cannot be used to generate accurate insights and often leads to longer time-to-market.

**Massive manual effort required**
Unlocking data from unstructured and semi-structured documents and converting it into digital formats requires massive manual effort which can be time-consuming, expensive, and prone to errors.

**Limitations of traditional automation tools**
Traditional automation tools such as RPA and OCR-/template-based capture tools are unable to process unstructured and semi-structured documents.

The large number of document-based processes in an enterprise limit digital transformation outcomes due to these factors.
Intelligent Document Processing (IDP) has emerged to overcome these challenges, leveraging AI to address document processing and automate conversion of unstructured data into digital formats.

Address limitations of traditional RPA/OCR
It adds a layer of probabilistic decision-making over traditional technologies, such as RPA and OCR, thereby achieving a higher degree of automation.

Automate document processing
IDP solutions can ingest, classify, and extract data from semi-structured and unstructured documents using ML techniques, which can be further fed into downstream applications.

Clean data upfront
It provides high quality and timely data, which can be further fed into other applications and used in downstream processes.
IDP forms a key component within the broader intelligent automation ecosystem
What is IDP and why is it important?

- Understanding enterprise grade IDP solutions
- OCR vs. IDP
- Types of documents and data
- Key benefits of IDP software solutions
- Key core technologies powering IDP capabilities
Understanding enterprise-grade IDP solutions

IDP software solutions blend the power of AI technologies to efficiently process all types of documents and feed the output into downstream applications.

An enterprise-grade IDP solution performs the following actions:

- **Pre-processing**: performs image pre-processing to increase the quality of the scanned document and uses OCR/computer vision technology to capture data.
- **Classification**: indexes and classifies the documents into categories using text mining & ML/deep learning capabilities.
- **Extraction**: extracts relevant data, leveraging NLP and ML/deep learning capabilities for further processing.
- **Post-processing**: validates the extracted data with the help of pre-defined taxonomies, data dictionary, and business validation rules.

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### Intelligent Data Processing (IDP) solution

**PRE-PROCESSING**
- Image pre-processing
- Data capture
- Auto-crop, noise reduction, etc.
- Computer vision and Optical Character Recognition (OCR)

**CLASSIFICATION**
- Indexing & classification
- Text mining and machine/deep learning

**EXTRACTION**
- Extraction of relevant data
- NLP and machine/deep learning

**POST-PROCESSING**
- Data validation
- Internal/external business validation rules etc.

**Workflow orchestration**

- Human-in-the-loop for verification and correction
- Structured data fed to downstream applications (ERP, CRM, SAP legacy systems, etc.) via APIs or RPA
OCR vs. IDP

IDP solutions are capable of processing documents with greater accuracy and are more resilient to changes in document templates than traditional OCR.

**Conventional OCR/template-based solution**

- OCR converts images of documents into machine-encoded text and extracts specific fields based on templates.
- It uses rule-based or template-based extraction. User needs to train the system for each template type.
- Every converted document needs to be manually reviewed, unless the input documents are standard (in quality, positional elements, etc.).
- Cannot process unstructured documents such as contracts and emails.

**IDP solution**

- It may use OCR to convert images of documents to digital format, but extracts specific information using machine learning and/or deep learning.
- The extraction does not depend on the template but content. User needs to do minimal (if any) training for minor template changes.
- Once the system is trained, Straight Through Processing (STP) can be enabled. The percentage of STP achieved can vary.
- With the help of Natural Language (NL) capabilities, the system can process complex unstructured documents and can also create summaries.
Document types processed using IDP solutions
IDP solutions can process structured, semi-structured, and unstructured documents

<table>
<thead>
<tr>
<th>Definition</th>
<th>Structured documents</th>
<th>Semi-structured documents</th>
<th>Unstructured documents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Structured documents can be mapped into a pre-defined template with a fixed layout and tags to separate semantic elements</td>
<td>Semi-structured documents are those documents which have either variability of layout or variability of semantic expression but generally contain some general keys as to the documents organizational structure</td>
<td>Unstructured documents do not conform to a pre-defined data structure and lack keys to separate semantic elements. The information may be in text-heavy documents, images, or videos.</td>
</tr>
</tbody>
</table>

| Type of use cases | Standard forms such as medical/vehicle registration forms and government forms | Invoices, purchase orders, shipping documents, bill of lading, paystubs, and checks | Contracts, lease agreements, loan documents, emails, news articles, financial statements, annual reports, and objects in images |

| Processing capabilities | OCR recognizes printed characters and converts images into machine-readable text | AI/ML is used to train the system to identify, classify, and extract relevant information using tags, which can be linked to a position or visual elements or a key phrase | NLP is used to interpret and extract information out of free-flowing text in natural language. It can conduct sentiment analysis, topic identification, entity extraction, and intent analysis |
|                        | AI/ML helps in handling variance in quality of documents during extraction | Reasonable accuracy and STP levels can be expected, with some human intervention in review and correction of the data processed | Natural language generation can be used to process datasets and documents to summarize text and generate custom reports in human language |
|                        | Post-training, the system can achieve high accuracy and STP levels with little human involvement | | Lower STP levels, as human review and/or interpretation may be required to generate the required output |
# IDP document data types

Within semi-structured and unstructured documents, complexity of extraction may vary based on data types present.

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Data types</th>
<th>Maturity of IDP solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Cursive handwriting, Charts, Stamps, Signatures</td>
<td>Low maturity</td>
</tr>
<tr>
<td>Medium</td>
<td>Handwritten block text, Checkboxes, Barcodes, Logos</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Printed text, Tables</td>
<td>High maturity</td>
</tr>
</tbody>
</table>
Key benefits of IDP software solutions

Operational impact
- Streamlines document tracking
- Increases productivity and efficiency of digital & non-digital workforce
- Faster turnaround times due to increased Straight Through Processing (STP)
- Improves accuracy with minimum manual intervention
- Improves employee experience
- Improves compliance and governance

Cost impact
- Reduces the overall cost of processing huge volumes of data
- Generates quick Return On Investment (ROI)

Business impact
- Improves customer satisfaction when used in a customer-facing process such as customer onboarding
- Impacts top-line growth, for instance, by enabling creation of new products
- Enables business continuity and builds enterprise resilience
OCR, computer vision, ML & deep learning models, and NLP are the key core technologies powering IDP capabilities

Computer vision uses AI to enable automatic extraction, analysis, and understanding of useful information from digital images. Only a few solutions leverage computer vision technology to recognize images/pictures within documents.

Converting images of documents into machine-encoded text. OCR is trained using ML and deep learning algorithms to increase its accuracy. Specialized technologies are used to capture specific data types such as handwriting, barcodes, signatures, and checkmarks. ICR is a tool that uses neural networks to recognize different fonts and handwriting styles, whereas OMR can recognize human-marked data such as checkmarks.

IDP solutions have built-in ML & deep learning algorithms for document classification & extraction, training of the software, and image pre-processing to complement the OCR. A few solutions contain proprietary models, while others use common algorithms such as CNN, RNN, SVM, Markov chains, and Naïve Bayes.

With the help of NLP, IDP solutions can analyze the running text in documents, understand the context, consolidate the extracted data, and map the extracted fields to a defined taxonomy. It can help in recognizing the sentiments from the text (e.g., from emails and other unstructured data) and in classifying documents into different categories. It also assists in creating summaries of large documents or data from charts using NLG by capturing key data points.
IDP market characteristics

- IDP adoption
- IDP adoption trends by
  - Industry
  - Geography
  - Process area
  - Buyer size
- Drivers for IDP adoption
- Buyer satisfaction
While the COVID-19 pandemic has impacted the growth of IDP market in the short term, its adoption is expected to increase, driven by strong demand for automation.

- COVID-19 tempered the growth of the IDP market in 2020, as uncertainty pushed enterprises to put automation projects on hold in Q2 2020. However, Q3 and Q4 not only saw the demand recover, but also accelerate, as enterprises looked to automation to solve new challenges and cope with work-from-home models.
- The market grew at a rate of 25-30% and stood at ~US$700-750 million at the end of 2020.
- The pandemic has amplified the importance of automation and enterprises are looking to reduce dependence on manual processing and accelerate their automation journeys.
- Driven by mounting demand for automation success stories of IDP, the market is expected to show increased adoption in coming years and grow at a rate of 55-65% annually.
- The key growth drivers of IDP adoption are:
  - Strong demand for automation to reduce costs, increase operational efficiencies, and build business resiliency.
  - Rising need for enterprises to process large volumes of semi-structured and unstructured documents with greater accuracy and speed.
  - Increased adoption of complementary technology solutions such as RPA and the demand to enable end-to-end process automation.
  - Improved sophistication of AI technologies, which significantly increases accuracy rates of IDP solutions as compared with traditional OCR solutions.

### IDP independent technology vendor market size

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue in US$ million</th>
<th>CAGR</th>
<th>Loss of revenue due to COVID-19 impact on IDP market</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>~350-370</td>
<td>50-60%</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>~540-560</td>
<td>25-30%</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>~700-750</td>
<td>~55-65%</td>
<td></td>
</tr>
<tr>
<td>2022E</td>
<td>~1850-1950</td>
<td>55-65%</td>
<td></td>
</tr>
</tbody>
</table>

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1. Based on revenue estimates of 27 IDP technology vendors projected out to estimate the total IDP technology vendor market. It does not include revenue generated by service providers, consultancy firms, or system integrators.

Source: Everest Group (2021)
While BFSI enterprises are the early adopters of IDP solutions with over 40% share, adoption among other enterprises is expected to increase

- Banking and insurance continue to be the largest adopters of IDP solutions and account for ~30% and ~13% of the IDP market respectively
- The adoption in BFSI is mainly driven by the need to process huge volumes of semi-structured and unstructured documents such as KYC documents, invoices, claims, and records
- Government & public sector and professional services have shown significant growth in 2020, driven mainly due to increased need to improve efficiency, compliance, and reduce dependence on manual processing
- Various COVID-19-related use cases have also emerged in sectors that were most impacted by it such as government and public, healthcare and pharma, insurance, and airlines
- The adoption of IDP solutions is growing in the manufacturing and healthcare & pharma industries. These industries have experienced increased deployment of IDP solutions across multiple use cases such as invoices, order forms, change requests, records patient onboarding, and health records management
- CPG & retail, travel & logistics, and telecom are also deploying IDP solutions to process documents in proof of delivery, custom declarations, bills of lading, driver logs, maintenance logs, etc.

IDP software market size by buyer industry
License revenue in percentage; US$ million

<table>
<thead>
<tr>
<th>Industry</th>
<th>License Revenue</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking &amp; capital markets</td>
<td>29%</td>
<td>30%</td>
<td>35-40%</td>
</tr>
<tr>
<td>Insurance</td>
<td>13%</td>
<td>13%</td>
<td>30-35%</td>
</tr>
<tr>
<td>Government &amp; public sector</td>
<td>7%</td>
<td>11%</td>
<td>10-15%</td>
</tr>
<tr>
<td>High-tech &amp; telecom</td>
<td>11%</td>
<td>10%</td>
<td>10-15%</td>
</tr>
<tr>
<td>Healthcare &amp; pharma</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Professional services</td>
<td>8%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>4%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>CPG &amp; retail</td>
<td>6%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Media &amp; entertainment</td>
<td>6%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Others</td>
<td>10%</td>
<td>5%</td>
<td>(30-35)%</td>
</tr>
</tbody>
</table>

Note: Based on the capability assessment of 27 IDP technology vendors
Source: Everest Group (2021)

1 Others include energy, real estate, shared services, utilities, hospitality, and legal
KYC, invoice processing, insurance claims, patient onboarding, patient records, proof of delivery, and order forms are the most common use cases of IDP solutions

<table>
<thead>
<tr>
<th>Processes</th>
<th>Use cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance &amp; accounting</td>
<td>Finance and accounting processes such as accounts payable and accounts receivable have widely implemented IDP solutions for increasing efficiency and reducing errors in processing.</td>
</tr>
<tr>
<td>Human resources</td>
<td>HR processes such as employee on-boarding, resume screening, applications processing, and benefits management have seen increased adoption of IDP solutions.</td>
</tr>
<tr>
<td>Procurement</td>
<td>IDP solutions are used in the procurement function to process documents such as contracts, forms, procurement claims, bill of lading, and weight tickets.</td>
</tr>
<tr>
<td>BFSI industry specific</td>
<td>BFSI industry-specific use cases such as KYC documents, insurance claims, mortgage documents, bank statements, and checks processing have seen strong adoption in the market.</td>
</tr>
<tr>
<td>Healthcare industry specific</td>
<td>IDP solutions are used in healthcare &amp; pharma industry-specific use cases related to R&amp;D, patient onboarding, patient records, patient surveys, physician referrals, and processing claims-related documents.</td>
</tr>
<tr>
<td>CPG &amp; retail industry specific</td>
<td>CPG &amp; retail industries use IDP solutions for processing documents such as proof of delivery, custom declarations, bills of lading, driver logs, and maintenance logs.</td>
</tr>
<tr>
<td>Manufacturing industry specific</td>
<td>The manufacturing industry has a lot of paper-laden manual work in areas such as invoices, order forms, change requests, proposals, and quality assurance records. A lot of this work is being automated through IDP.</td>
</tr>
</tbody>
</table>
**North America continues to account for more than 50% of the market share, while APAC is growing rapidly**

IDP software market size by buyer geography
License revenue in percentage; US$ million

- North America continues to be the largest market for IDP software solutions, experiencing a strong growth rate of around 35-40%. The growth is primarily driven by mature BFSI and healthcare sectors and technological advancements.

- The growth in the APAC market can be attributed to strong enterprise growth in the region, rapid technological advancement, as well as a growing need to improve operational efficiencies. Availability of regional language capabilities and increased sophistication of IDP software products has facilitated greater adoption.

- Continental Europe grew at a relatively lower rate than the market, primarily due to slower economic growth in the region.

- The emerging market of LATAM also experienced a healthy growth rate, mostly driven by continued success stories in mature geographies, as well as increased availability of easily deployable pre-packaged solutions. However, LATAM and MEA are still largely untapped and offer considerable growth potential.

Note: Based on the capability assessment of 27 IDP technology vendors
Source: Everest Group (2021)
Adoption of IDP solutions in industry-specific processes, especially in BFSI and healthcare, experienced significant growth

IDP software market size by business process/function
License revenue in percentage; US$ million

100% = 700-750

- Industry-specific processes continue to dominate the adoption of IDP solutions with the highest growth rate. Within industry-specific processes, BFSI segment with use cases in processes such as customer onboarding, mortgage processing, trade financing, and claims processing, has experienced the highest adoption of IDP solutions.
- IDP solutions are also largely deployed within F&A, for accounts payable and accounts receivable use cases, to deal with the high volume and error-prone nature of these processes.
- Other processes such as mailroom, procurement, and HR applications have also seen increased adoption owing to enhanced focus of enterprises to reduce operational costs and increase workforce productivity.

Industry-specific 55% ▲▲▲
F&A 23% ▲▲
Procurement 4% ▲
HR 3% ▲
Web-based/e-commerce 3% ▲▲
Contact center 2% ▲
Mail center 2% ▲
Mailroom 1% ▲
Others 10% ▲

1 Others include government customs form processing, food and beverages industry-specific processes, etc.
Note: Based on the capability assessment of 27 IDP technology vendors
Source: Everest Group (2021)
IDP solutions find applications across enterprises, regardless of size; volume of documents and time spent on processing are the key criteria for applicability

IDP software market by buyer size
License revenue in percentage; US$ million

- Large buyers continue to have the highest adoption. A significant chunk of adoption among large buyers is driven by RPA partners and system integrators
- Mid-size enterprises, small enterprises, and SMBs also experienced healthy growth in the market. Availability of point solutions, focused on specific business function or industry, are leading to greater adoption by these enterprises
- Flexibility, in terms of commercial models that do not require huge upfront costs, can lead to further adoption by small and mid-sized enterprises

Note: Based on the capability assessment of 27 IDP technology vendors
Source: Everest Group (2021)

1 Buyer size is defined as large (>US$5 billion in revenue), mid-sized (US$1-5 billion in revenue), small (US$50 million-US$1 billion in revenue), and SMBs (<US$50 million in revenue)
## Market trends | drivers for IDP adoption

While improving operational efficiency and productivity remains a key driver of IDP adoption among buyers, cost impact has also become equally relevant.

### Key factors driving IDP adoption

<table>
<thead>
<tr>
<th>Importance on a scale of 1 to 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
</tr>
<tr>
<td>Operational impact</td>
</tr>
<tr>
<td>Cost impact</td>
</tr>
<tr>
<td>Business impact</td>
</tr>
</tbody>
</table>

### Subdimensions

<table>
<thead>
<tr>
<th>Subdimensions</th>
<th>Relevance of the driver for clients (2020)</th>
<th>Vendor performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve operational efficiency and productivity</td>
<td>6.5</td>
<td>6.3</td>
</tr>
<tr>
<td>Enhance employee experience</td>
<td>5.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Improve governance and compliance</td>
<td>5.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Cost savings</td>
<td>6.2</td>
<td>6.1</td>
</tr>
<tr>
<td>Faster ROI</td>
<td>5.8</td>
<td>6.1</td>
</tr>
<tr>
<td>Increase customer satisfaction</td>
<td>5.8</td>
<td>6.2</td>
</tr>
<tr>
<td>Grow revenue</td>
<td>4.8</td>
<td>5.5</td>
</tr>
</tbody>
</table>

- Improving operational efficiency and productivity continues to be a key driver for IDP adoption. Over the past year, enterprises have started to accord equal importance to cost impact as well as business impact, especially with increasing focus on faster ROI and increasing customer satisfaction.
- Enterprises are highly satisfied with the ability of vendors to help them achieve operational efficiencies, while there is significant scope for vendors to help enterprises improve governance and compliance and grow their revenue.

Sample: Based on feedback collected from 70+ enterprise buyers in 2021
Source: Everest Group (2021)
Market trends | overall buyer satisfaction
While buyers are satisfied with IDP vendors on their overall performance, they expect better product training and support capabilities from them

IDP vendor KPIs
On a scale of 1-7, 7 being the highest

- Buyers have indicated high overall satisfaction with IDP vendors, with appreciation for core IDP product capabilities
- However, there is scope for vendors to improve product training & support, product vision & roadmap, and help them achieve their objectives of adopting IDP solutions
- Within IDP capabilities, while scalability, cognitive capabilities, and ease of use were frequently recalled as key strengths by buyers, analytics capabilities and pre-training of the software were identified as areas of improvement

Sample: Based on feedback collected from 70+ enterprise buyers in 2021
Source: Everest Group (2021)
The IDP journey

- Understand current state and market capabilities
- Building a business case – what is the right outcome target state?
- Determining the capabilities required to achieve identified outcomes
- Identify all determinants and map path
- Execute against mapped path
For enterprises that are thinking about IDP adoption programmatically across the organization, the following approach can be taken:

Enterprises can break down their IDP journey into five distinct steps:

1. Understand the current state
   - Understand the current state of document processing
   - Map out current capabilities and outcomes
   - Understand IDP technologies available and possible outcomes achievable

2. Create a business case for the desired outcome
   - Identify processes suitable for IDP implementation
   - Detail the business case for the desired outcome
   - Refine target outcome state if the business case does not stand
   - Iterate, if required, and identify achievable outcomes

3. Determine capability target state
   - Based on achievable outcomes, determine the capability level required
   - Map out components of capability that would need to be created/achieved as part of the execution path

4. Identify all determinants and map path
   - Identify all determinants to the execution path, including environmental ones
   - Identify the best-fit path based on both IDP and environmental determinants

5. Execute against mapped path
   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize
Enterprises can break down their IDP journey into five distinct steps

1. Understand the current state
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5. Execute against mapped path
   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize
It is important for enterprises to understand their current and desired target outcome states to map a best-fit execution path for their IDP journey.

- The IDP journey for every organization begins with an understanding of its current state of maturity and its aspirational target state.
- While the current and target states outline the gaps to be bridged, the actual execution path to be followed to bridge those gaps will depend on multiple factors, as described in subsequent pages.
The Pinnacle Model® provides a framework to help enterprises measure the IDP journey’s current and target states, both in terms of outcomes and capabilities.

Each enterprise will have its own specific journey depending on the industry, size and culture. Definition of Pinnacle Enterprises™:
- Enterprises that stand apart from others for their business outcomes and capability maturity
- Not all enterprises will be working toward the same destination, but alignment is critical
Outcomes: Use the Pinnacle Enterprise® outcomes model to understand your current state and goals for the desired target state

- Overall, we can measure the outcome through a combination of three factors: cost impact, operational impact, and business impact.
- We can further break these down into subdimensions that fall into one of the three buckets depending on the level of the outcome achieved. The exact measure of outcomes will vary significantly by the scope of IDP implementation.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Subdimensions1</th>
<th>Achievement level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business impact</td>
<td>Customer satisfaction</td>
<td>High</td>
</tr>
<tr>
<td>Operational impact</td>
<td>Employee productivity</td>
<td>Middle</td>
</tr>
<tr>
<td>Cost impact</td>
<td>Quick ROI</td>
<td>Low</td>
</tr>
</tbody>
</table>

Breaking down and measuring outcomes:

1 Not exhaustive
Capability: The Pinnacle Enterprises® Capability Maturity Model (CMM)\(^1\) can help enterprises understand their current state of capabilities and subsequently where they want to get to.

- Overall, capability is measured through a combination of five factors – vision & strategy, implementation, organization & talent, technology, and resourcing.
- Each of these is further broken down into subdimensions, which can be measured as falling in one of the four buckets depending on the maturity level: basic, typical, advanced and pinnacle.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Subdimensions(^2)</th>
<th>Achievement level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision &amp; strategy</td>
<td>Funding/sponsorship, Project initiation</td>
<td>High</td>
</tr>
<tr>
<td>Organization structure</td>
<td>IDP team structure, Sophistication of document processing</td>
<td>Advanced</td>
</tr>
<tr>
<td>Technology</td>
<td>IDP training and education, Scale, scope, and speed of IDP deployments</td>
<td>Typical</td>
</tr>
<tr>
<td>Talent management</td>
<td></td>
<td>Basic</td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Refer to pages 97-111 for the detailed model, dimensions, and subdimensions
2. Not exhaustive
Enterprises can break down their IDP journey into five distinct steps

1. Understand the current state
   - Understand the current state of document processing
   - Map out current capabilities and outcomes
   - Understand IDP technologies available and possible outcomes achievable

2. Create a business case for the desired outcome
   - Identify processes suitable for IDP implementation
   - Detail the business case for the desired outcome
   - Refine target outcome state if the business case does not stand
   - Iterate, if required, and identify achievable outcomes

3. Determine capability target state
   - Based on achievable outcomes, determine the capability level required
   - Map out components of capability that would need to be created/achieved as part of the execution path

4. Identify all determinants and map path
   - Identify all determinants to the execution path, including environmental ones
   - Identify the best-fit path based on both IDP and environmental determinants

5. Execute against mapped path
   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize
Enterprises should identify and prioritize potential processes for IDP adoption. Once potential processes are identified, business case should be created to refine the achievable target outcome state.
Create a business case and refine target outcome state, if required
List of data extraction-based processes should be identified through a filtering approach

Applicability of IDP

Filtering criteria

Lost list of processes
Processes involve documents in semi-structured or unstructured format

Filter for data extraction-based processes
- Data extraction and interpretation requirement
- Consistency of process – similar data to be extracted and entered into a downstream system from similar category of (but not necessarily the same) documents

List of processes to be considered for IDP
Prioritization framework | enterprise processes

The identified data extraction-based processes should be prioritized for IDP implementation, leveraging a structured and repeatable framework.

Variations in data can have both positive and negative impact on IDP potential. Please refer to the next page for more details.

1 Sensitivity of data is becoming a less critical parameter as there are various ways to circumvent this (such as redaction/masking of data)

2 Variations in data involved around unauthorized data access
Create a business case and refine target outcome state

Variations in data can have both negative and positive impact on IDP potential, depending on nature of variations.

**Example 1**
Consider a process that involves 10 different known variations in the nature of data/documents and unknown variations that keep occurring over longer periods. In this case, the model has to be continuously trained for new variations at regular intervals, which continuously increases training costs and has negative impact on the IDP potential.

**Example 2**
Consider a process that involves 15 different known variations in the nature of data/documents and the likelihood of new variations is limited. In this case, the model can be trained to handle those 15 variations to yield high level of accuracy. Over time, the training cost decreases and reaches a steady state, yielding higher ROI.
Illustration 1: A bank evaluating its KYC-AML (anti-money laundering) business function for IDP implementation identifies the processes to be considered for IDP

<table>
<thead>
<tr>
<th>KYC (onboarding, refresh, etc.)</th>
<th>Enhanced Due Diligence (EDD) / sanctions</th>
<th>Monitoring/surveillance</th>
<th>AML reporting</th>
<th>Fraud management</th>
<th>Chargeback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document management</td>
<td>List/media screening (PEP, sanctions, media, etc.)</td>
<td>Activity/transaction monitoring</td>
<td>Alert management/investigation</td>
<td>Hardware monitoring</td>
<td>Escalation management</td>
</tr>
<tr>
<td>Customer risk assessment and data profiling</td>
<td>External data checks</td>
<td>AML monitoring for Money Service Businesses (MSB)</td>
<td>Compliance reporting</td>
<td>Navigation and link analysis</td>
<td>Dispute/recovery management</td>
</tr>
<tr>
<td>Compliance and quality checks</td>
<td>Data stream validation/ notification</td>
<td>Trade surveillance</td>
<td>Data sharing requests/reporting</td>
<td>Transaction screening</td>
<td>Model validation and refinement</td>
</tr>
</tbody>
</table>

Platforms

Analytics
Once the processes are identified, ones with high processing cost and high IDP potential should be considered for further evaluation.

Processes in the upper right-hand quadrant would be the top priority for further consideration, given their high IDP potential and high processing costs.
Illustration 2: Consider an organization evaluating its Finance & Accounting (F&A) business function for IDP implementation

Finance and Accounting (F&A) value chain

- Treasury and risk management
- Procure-to-Pay (P2P)
- Financial Planning & Analysis (FP&A)
- Internal audit
- Regulatory reporting & compliance
- Order-to-Cash (O2C)
- Fixed assets
- General accounting
- Accounts payable and T&E
- Accounts receivable
- Spend analytics
- Dispute & deduction management
- Billing
- Order management
- F&A operations analytics

Vendors

Customers

Requisition-to-PO  Invoice processing  Accounts payable and T&E

0 Requisition-to-PO  Invoice processing  Accounts payable and T&E

Order management
The list of processes to be considered for IDP implementation are identified based on content-centricity, data extraction requirement, and consistency of information to be extracted.

<table>
<thead>
<tr>
<th>F&amp;A strategy</th>
<th>Budgeting/forecasting</th>
<th>Capital budgeting</th>
<th>Treasury and risk management</th>
<th>Management reporting and analysis</th>
<th>Regulatory reporting and compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy, including tax and risk position</td>
<td>Strategy</td>
<td>Strategy</td>
<td>Strategy</td>
<td>Strategy</td>
<td>Strategy</td>
</tr>
<tr>
<td>Accounting policy and control</td>
<td>Budget analysis and approval process</td>
<td>Administering approval process</td>
<td>Bank relations and administration</td>
<td>Regular reporting</td>
<td>Data extraction</td>
</tr>
<tr>
<td>Shareholder relations</td>
<td>Building line-item budget</td>
<td>Project reporting</td>
<td>Cash management and forecasting</td>
<td>Analysis</td>
<td>Management Discussion and Analysis (MD&amp;A)</td>
</tr>
<tr>
<td>M&amp;As/divestitures</td>
<td>Forecasting roll-ups and consolidation</td>
<td>Investments</td>
<td>Ad hoc analysis and special projects</td>
<td>Tax planning and analysis</td>
<td>Regulatory reporting</td>
</tr>
<tr>
<td>External reporting</td>
<td>Forecasting analysis and approval process</td>
<td>Debt management</td>
<td>Cost accounting</td>
<td>Tax audit</td>
<td>Compliance program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy, Establishing annual audit plan</th>
<th>Strategy, Conducting audits</th>
<th>Strategy, Reports and recommendations</th>
<th>Strategy, Budget analysis and approval process</th>
<th>Strategy, Project reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy, Budget analysis and approval process</td>
<td>Strategy, Building line-item budget</td>
<td>Strategy, Forecasting roll-ups and consolidation</td>
<td>Strategy, Forecasting analysis and approval process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transaction intensive</th>
<th>Judgment intensive</th>
<th>Strategy intensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed assets</td>
<td>General accounting</td>
<td>Accounts receivable</td>
</tr>
<tr>
<td>Maintaining master data</td>
<td>Strategy</td>
<td>Strategy</td>
</tr>
<tr>
<td>Merger, acquisition, and consolidation of assets</td>
<td>Processing general entries</td>
<td>Customer setup</td>
</tr>
<tr>
<td>Post depreciation</td>
<td>Account reconciliations</td>
<td>Billing</td>
</tr>
<tr>
<td></td>
<td>Inter-company accounting</td>
<td>Cash applications</td>
</tr>
<tr>
<td></td>
<td>Preparing trial balances</td>
<td>Credit and collections</td>
</tr>
<tr>
<td></td>
<td>Perform closings</td>
<td>Customer inquiries</td>
</tr>
<tr>
<td></td>
<td>Managing consolidations</td>
<td>Reporting</td>
</tr>
<tr>
<td></td>
<td>Cost accounting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tax</th>
<th>Accounts payable and T&amp;E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>Strategy</td>
</tr>
<tr>
<td>Tax accounting</td>
<td>Maintaining master data</td>
</tr>
<tr>
<td>Tax planning and analysis</td>
<td>Processing payment requests</td>
</tr>
<tr>
<td>Tax compliance</td>
<td>Processing travel &amp; expense (T&amp;E) claims</td>
</tr>
<tr>
<td>Tax audit</td>
<td>Administering EDI/P-card</td>
</tr>
<tr>
<td>Monthly end closing</td>
<td>Month-end closing</td>
</tr>
<tr>
<td>Vendor inquiries</td>
<td>Vendor inquiries</td>
</tr>
<tr>
<td>Reporting</td>
<td>Reporting</td>
</tr>
</tbody>
</table>
Once the processes are identified, ones with high processing cost and high IDP potential should be considered for further evaluation.

Processes in the upper right-hand quadrant would be the top priority for further consideration, given their high IDP potential and high processing costs.
Considerations when creating a business case for the identified process

It is important to understand the different components of the business case so that it is created keeping in mind the different target outcome states

- In the case of unstructured documents, IDP solutions typically provide productivity gain but don’t enable STP, as each document needs to be validated by human operators.
- For semi-structured documents, IDP provides both STP and productivity gain.

Typically, business cases are created around STP rates and productivity gain, which reflect the direct cost savings.

High document level accuracy enables STP. However, in some industries such as banking and financial services, compliance requirements and sensitivity of data always demand human-in-the-loop, even though STP can be achieved.

Productivity gain

Manual hours saved in terms of cost with help of IDP

Productivity gain is a function of 3 factors:

- Field level accuracy
- Enterprises’ threshold setting of confidence level

STP rate is a function of two factors:

- Field level accuracy
- Enterprises’ threshold setting of confidence level

When the confidence level of all the fields is higher than the threshold settings of respective fields, the document will be processed without human intervention (STP).
Create a business case and refine target outcome state

- Accuracy of the IDP solution and consequently STP rates increase with training, i.e., the system learns and gets better as it is exposed to larger volumes of documents.
- As we move from one state to another (higher STP and accuracy), the system needs to be trained on increasing volumes of documents. This leads to an increase in training cost as we move from one state to another, all other costs remaining static.
Create a business case and refine target outcome state
Enterprises need to target appropriate STP given the possibility of diminishing returns

Example 1: Invoice processing; 500,000 invoices

<table>
<thead>
<tr>
<th>STP rate</th>
<th>Upfront training cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
<td>x</td>
</tr>
<tr>
<td>70%</td>
<td>1.64x</td>
</tr>
<tr>
<td>80%</td>
<td>2.4x</td>
</tr>
</tbody>
</table>

License cost, implementation cost, and maintenance cost remain static.

At this scale, investing in additional training for higher STP, may not be cost effective on an incremental basis.
Create a business case and refine target outcome state

Enterprises need to target appropriate STP given the possibility of diminishing returns

Example 1: Invoice processing; 5,000,000 invoices

Net business benefit (US$ thousands)

<table>
<thead>
<tr>
<th>State</th>
<th>STP rate</th>
<th>Upfront training cost</th>
<th>License cost, implementation cost, and maintenance cost remain static</th>
</tr>
</thead>
<tbody>
<tr>
<td>State 1</td>
<td>60%</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>State 2</td>
<td>70%</td>
<td>1.64x</td>
<td></td>
</tr>
<tr>
<td>State 3</td>
<td>80%</td>
<td>2.4x</td>
<td></td>
</tr>
</tbody>
</table>
Enterprises can break down their IDP journey into five distinct steps

1. Understand the current state
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5. Execute against mapped path
   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize
Define target capability state

Having determined an achievable outcome, enterprises should then seek to map out corresponding capability requirements to achieve the desired outcome.

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software learning</td>
<td>No training data sets are generated from manual review</td>
<td>Automatic generation of training batches during manual review; automatic feeding of data sets into the system for training</td>
<td>Automatic generation of training batches during manual review; along with feature for enterprise users to approve training sets to improve accuracy</td>
<td>Automatic generation of training batches during manual review; along with feature for enterprise users to approve training sets to improve accuracy; approved mechanism at admin level as well</td>
</tr>
<tr>
<td>Classification of documents</td>
<td>Do not have the ability to automatically classify documents</td>
<td>Ability to identify discrete documents with low accuracy, leveraging basic statistical approach</td>
<td>Ability to identify discrete documents with medium accuracy, leveraging basic ML-based approach</td>
<td>Ability to identify discrete documents and different pages within a stream of documents with high accuracy, leveraging advanced neural networks</td>
</tr>
<tr>
<td>Flexibility with ML algorithms</td>
<td>One fixed pre-built ML algorithm for every use case / document type</td>
<td>Different pre-built ML algorithms for different use cases / document types</td>
<td>Different pre-built ML algorithms for different use cases / document types with an option for user to select the appropriate algorithm</td>
<td>Feature to recommend best ML algorithm to user to choose from different pre-built algorithms</td>
</tr>
<tr>
<td>Sophistication of document processing</td>
<td>Basic OCR for digitizing content</td>
<td>OCR and ML-based; document classification, data capture, and extraction using machine learning and validation</td>
<td>OCR, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning; auto ML, NLP; intent analysis, and validation</td>
<td>OCR, domain ontology, deep learning; auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, intent analysis, and validation</td>
</tr>
</tbody>
</table>

**Note**: Refer to pages 97-106 to understand the Capability Maturity Model (CMM).
**Everest Group organizes IDP capabilities according to five key components of enterprises’ IDP journey**

<table>
<thead>
<tr>
<th>Journey components</th>
<th>Key focus area</th>
</tr>
</thead>
</table>
| Vision & strategy          | • To understand the vision of the organization for IDP and the drivers behind its adoption  
                              • To assess the organization’s readiness for IDP adoption from a process and security perspective |
| Organization structure     | • To assess the governance model for IDP initiatives and the extent of collaboration among the implementing groups  
                              • To analyze the talent management strategy for the organizational change caused by IDP adoption |
| Technology                 | • To assess the extent to which various components of IDP technologies such as OCR, software learning, computer vision, and analytics are being utilized  
                              • To assess the level of sophistication of various IDP technologies deployed |
| Talent management          | To assess the sourcing strategy, training, and education programs for various IDP skills                                                                                                                                 |
| Implementation             | To assess the scale and scope of IDP adoption along with the pace at which IDP has been adopted – in terms of number and types of documents processed |
Enterprise IDP capability is assessed across four maturity levels

The four capability maturity levels

- **Basic**
  - Significantly lagging in performance
  - 25%
  - Lagging behind peers in capability performance
  - Poorly controlled and reactive
  - Adopted in an ad hoc manner based on opportunities that emerge
  - No major investment in terms of time and effort to improve the capability
  - Primarily delivers some cost impact

- **Typical**
  - Performing at peer/market levels; most organizations are at this level of maturity
  - 50%
  - Capability performance at current peer/market levels
  - Limited investment in terms of time and effort to develop basic capabilities
  - Delivers cost impact and some business outcomes

- **Advanced**
  - Exceeding peer/market performance
  - 15%
  - Capabilities exceed typical performance levels
  - Significant time and effort are put forth to develop advanced capabilities
  - Delivers significant business outcomes

- **Leader**
  - At the forefront; setting new levels of excellence
  - 10%
  - Differentiated and best-in-class capabilities
  - Exemplifies the way to success
  - Well-planned and organized, thus setting the stage for innovation
  - Delivers best-in-class outcomes and strategic advantage

XX% Approximate share of enterprises at each maturity level
Enterprise IDP capability is assessed across over 25 capability elements

<table>
<thead>
<tr>
<th>Journey components</th>
<th>Capability</th>
</tr>
</thead>
</table>
| A. Vision & strategy (7 capabilities) | A1. Primary drivers of IDP adoption  
A2. Funding/sponsorship  
A3. Project initiation  
A4. Security & risk preparedness for IDP |
| B. Organization structure (8 capabilities) | B1. IDP team structure  
B2. Scope of automation CoE  
B3. Roles and responsibilities of CoE  
B4. Primary use of performance data  
B5. Focus on tracking/optimizing the benefits achieved  
B6. Level of employee engagement  
B7. Nature of impact on employees  
B8. Reusability of models |
| C. Technology (7 capabilities) | C1. Software learning  
C2. Classification of documents  
C3. Flexibility with ML algorithms  
C4. Sophistication of document processing  
C5. Pre-built use cases  
C6. Hosting options  
C7. Ancillary capabilities |
| D. Talent management (2 capabilities) | D1. Sourcing of IDP talent/skills  
D2. IDP training and education |
| E. Implementation – scale, scope, and speed (4 capabilities) | E1. Distribution of IDP projects by stage  
E2. Scale of IDP adoption  
E3. Scope of IDP deployments across functions  
E4. Speed of IDP adoption |
Enterprises can break down their IDP journey into five distinct steps

1. Understand the current state of document processing
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   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize

Enterprises can break down their IDP journey into five distinct steps
The IDP journey will take different forms based on two sets of determinants – IDP-related (science) and environmental (art)

- IDP determinants
  - Current outcome and capability
  - Business case
  - Achievable target state outcome
  - Corresponding target state capability

- Environmental determinants
  - Organization structure
  - People-centricity
  - Availability of training data
  - Initiating stakeholder(s)
  - Risk appetite
  - Existing automation partnerships
  - Distributed workforce
Given the same current and target states, enterprises’ culture, structure, and other environmental determinants influence the routes they take.
IDP execution paths can be broken down into four key phases

Everest Group breaks down enterprises’ IDP execution path into four key phases

<table>
<thead>
<tr>
<th>Phase 1: Planning</th>
<th>Phase 2: Piloting</th>
<th>Phase 3: Scaling up</th>
<th>Phase 4: Steady-state</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key Focus</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business case</td>
<td>Select initial use cases</td>
<td>Refine IDP strategy</td>
<td>Institutionalize the governance model</td>
</tr>
<tr>
<td>Proof of Concept (POC)</td>
<td>Run pilot projects</td>
<td>Establish / refine the IDP governance model</td>
<td>Continuously improve</td>
</tr>
<tr>
<td>Tool selection</td>
<td>Monitor performance</td>
<td>Scale up across functions / geographies</td>
<td>Create awareness</td>
</tr>
<tr>
<td>Develop IDP strategy</td>
<td>Involve automation CoE</td>
<td>Embed IDP capabilities in the automation CoE</td>
<td></td>
</tr>
</tbody>
</table>

**Phase 1**
- Business case
- Proof of Concept (POC)
- Tool selection
- Develop IDP strategy

**Phase 2**
- Select initial use cases
- Run pilot projects
- Monitor performance
- Involve automation CoE

**Phase 3**
- Refine IDP strategy
- Establish / refine the IDP governance model
- Scale up across functions / geographies
- Embed IDP capabilities in the automation CoE
- Identify new opportunities

**Phase 4**
- Institutionalize the governance model
- Continuously improve
- Create awareness

---

**Key Focus**
- Overcome conceptual barriers to IDP implementation and build awareness
- Identify opportunities
- Develop the business case
- Align stakeholders (such as senior management and IT) to get backing for the POC
- Select tools/partners
- Identify skills sets required
- Develop an implementation approach and roadmap
- Get executive backing and funding
- Develop/train skill sets for IDP implementation
- Select and prioritize processes
- Set up infrastructure and design architecture
- Implement initial use cases / pilots
- Monitor performance
- Involve automation CoE
- Raise awareness and enable upskilling/reskilling
- Act on lessons learned to refine the IDP strategy and establish/refine the IDP governance operating model
- Scale training and teams
- Scale up across functions/geographies
- Scale up upskilling/reskilling of resources
- Set up a dedicated team and continuously identify new opportunities for IDP adoption
- Ensure operations with robust governance and controls
- Integrate a culture of innovation and design thinking across the organization
Use case: consider two distinct organizations with different characteristics, both seeking to reach similar target states from similar current states in the IDP journey for their expense management process

Consider two organizations with the same current state and achievable target state

- **Current state:** The organizations run a single T&E system with a workflow for submission of expense claims along with documents of proof by employees, followed by a manual verification and approval process. All the expense details are manually entered by the employees. Each organization also has seven FTEs currently employed in the manual expense proof validation process

- **Achievable target state:** 60% STP rate for all expense proof documents

The ideal execution path for each organization would depend on environmental determinants such as those detailed below:

**Environmental determinants**

<table>
<thead>
<tr>
<th>Organization A – conservative energy firm</th>
<th>Organization B – e-commerce firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized</td>
<td>Decentralized</td>
</tr>
<tr>
<td>High people centricity</td>
<td>People centricity</td>
</tr>
<tr>
<td>Operations driven</td>
<td>Initiating stakeholders</td>
</tr>
<tr>
<td>Low risk appetite; heavy regulation</td>
<td>Risk appetite</td>
</tr>
<tr>
<td>Centralized workforce</td>
<td>Workforce location</td>
</tr>
<tr>
<td>None on the automation front</td>
<td>Existing automation partnerships</td>
</tr>
<tr>
<td>Few historical documents and extracted values are available</td>
<td>Availability of training data</td>
</tr>
<tr>
<td></td>
<td>All historical documents and extracted values are available</td>
</tr>
</tbody>
</table>
While all enterprises will likely follow a set of steps in the execution path ...
... the nature of those steps will vary based on environmental determinants\(^1\)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Determinants</th>
<th>Path options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and prioritize processes using the prioritization framework</td>
<td>Risk appetite, Current outcome and capability, Implement one process at a time, Implement logical groups of processes sequentially, Big bang implementation</td>
<td></td>
</tr>
<tr>
<td>Plan implementation timelines, governance, and skill development for IDP and re-skilling affected employees</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Obtain alignment with IT for IDP implementation</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Obtain team buy-in, particularly impacted FTEs</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Select appropriate vendor tool based on capabilities required to achieve desired outcome</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Obtain management buy-in and budget</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Develop plan for the prioritized process</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Obtain required data sets to train the tool</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Obtain continuous communication as part of change management</td>
<td>People centrality, Inflating stakeholders, Low to no communication, Medium frequency of communication at BU level, Frequent communication driven by IT/General</td>
<td></td>
</tr>
<tr>
<td>Obtain training of existing talent for IDP operations</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Initiate governance mechanism</td>
<td>Risk appetite, Minimal ad hoc governance, Standardized decision making process</td>
<td></td>
</tr>
<tr>
<td>Initiate re-skilling for displaced employees</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Embark necessary skills in automation CoE</td>
<td>Organization structure, Inflating stakeholders, Centralized talent pool for IDP managed by automation CoE, Decentralized talent pool for IDP with high degree of collaboration with automation CoE, Slashed talent pool for IDP collaborating with automation CoE on ad-hoc basis</td>
<td></td>
</tr>
<tr>
<td>Setup a team to evaluate opportunities</td>
<td>Organizational readiness, Risk appetite, Availability of data</td>
<td></td>
</tr>
<tr>
<td>Template opportunity evaluation and processing</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Cut to production with human supervision until IDP achieves desired efficiency</td>
<td>Availability of data, Risk appetite, Always employ a human in the loop, Emplyo a human in the loop for verification for highly sensitive processes only, Allow STP where possible, with only exceptions requiring human intervention</td>
<td></td>
</tr>
<tr>
<td>Continuously monitor and report on metrics/KPIs</td>
<td>NA, NA</td>
<td></td>
</tr>
<tr>
<td>Repeat journey with next process in the priority list</td>
<td>NA, NA</td>
<td></td>
</tr>
</tbody>
</table>

---

1 Refer to pages 107-111 for the overview of the environmental determinants and the various path options for the enterprise at each step
Execution paths differ based on environmental determinants

**Execution path components**

- Identify and prioritize processes using the prioritization framework
- Plan implementation timelines, governance, and skill development for IDP and reskilling affected employees
- Obtain alignment with IT for IDP implementation
- Obtain team buy-in, particularly impacted FTEs
- Select appropriate vendor tool based on capabilities required to achieve the desired outcome
- Obtain management buy-in and budget

**Enterprise scenarios**

- Scenario 1: One process at a time
- Scenario 2: Minimal communication
- Scenario 3: Big bang

**Organization A’s path**

- Central level
- Leverage existing relationships
- Evaluate entire landscape

**Organization B’s path**

- Team-lead level
- Open communication with team

**ILLUSTRATIVE**

1. Step does not vary for organizations based on environmental determinant
2. Refer to Appendix pages 107-111 for variation of execution path by determinants
Execution paths differ based on environmental determinants (page 2 of 2)

<table>
<thead>
<tr>
<th>Execution path components</th>
<th>Enterprise scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate continuous communication as part of change management</td>
<td></td>
</tr>
<tr>
<td>Initiate training of existing talent for IDP operations¹</td>
<td></td>
</tr>
<tr>
<td>Initiate governance mechanism</td>
<td></td>
</tr>
<tr>
<td>Initiate reskilling for displaced employees</td>
<td></td>
</tr>
<tr>
<td>Develop pilot for prioritized process²</td>
<td></td>
</tr>
<tr>
<td>Obtain required data sets to train the tool</td>
<td></td>
</tr>
<tr>
<td>Cut to production with human supervision until IDP achieves the desired efficiency</td>
<td></td>
</tr>
<tr>
<td>Continuously monitor and report on metrics/KPIs¹</td>
<td></td>
</tr>
<tr>
<td>Repeat journey with next process in the priority list¹</td>
<td></td>
</tr>
</tbody>
</table>

1  Step does not vary for organizations based on environmental determinant
2  Refer to Appendix pages 107-111 for variation of execution path by determinants

Value of factors vary based on determinants, leading to different execution path scenarios²
Enterprises can break down their IDP journey into five distinct steps

1. Understand the current state
   - Understand the current state of document processing
   - Map out current capabilities and outcomes
   - Understand IDP technologies available and possible outcomes achievable

2. Create a business case for the desired outcome
   - Identify processes suitable for IDP implementation
   - Detail the business case for the desired outcome
   - Refine target outcome state if the business case does not stand
   - Iterate, if required, and identify achievable outcomes

3. Determine capability target state
   - Based on achievable outcomes, determine the capability level required
   - Map out components of capability that would need to be created/achieved as part of the execution path

4. Identify all determinants and map path
   - Identify all determinants to the execution path, including environmental ones
   - Identify the best-fit path based on both IDP and environmental determinants

5. Execute against mapped path
   - Execute based on the planned path
   - Course correct if and when new information comes to light
   - Continuously monitor, seek to improve & systematize
Having mapped the best-fit execution path, enterprises could leverage a variety of tools to develop an execution strategy and accelerate their IDP journeys.
Identifying and prioritizing processes for IDP adoption

Processes should be prioritized for IDP using a structured, repeatable framework.

The framework below helps identify high priority processes for IDP based on the overall IDP potential and cost of processing. Additionally, the relative ease of implementation consideration helps prioritize within quadrants.

1. Variations in data can have both positive and negative impact on IDP potential. Please refer to the next page for more details.
2. Sensitivity of data is becoming a less critical parameter as there are various ways to circumvent this such as redaction/masking of data.
**Identifying and prioritizing processes for IDP adoption**

For phases 1 and 2, easily implementable processes that deliver the maximum net benefit should be considered; for further scale, other processes can be considered as well.

**Phases 1 (Planning) and phase 2 (Piloting)**
- Select processes from quadrant 1 for phases 1 and 2
- As phase 1 is the POC, it should ideally address the process within the high-priority process quadrant (quadrant 1) that is the easiest to implement
- For phase 2, organizations can choose between easily implementable processes in quadrant 1 or more complex processes, depending on the confidence gained from POC and other organizational nuances

**Phases 3 (scaling up) and phase 4 (steady-state)**
- For phases 3 and 4, i.e., when scaling up beyond pilots, quadrant 1 continues to be the first priority, typically moving from easier- to harder-to-implement processes
- Upon exhaustion of processes in quadrant 1, processes in quadrants 2 and 3 can be selected (those processes for which the business case still makes sense)
- Typically, quadrant 4 processes are left as is, even in the high maturity phases, as likely there is not much of a strong business case for them. As technology matures, some of these processes may become attractive from a business case perspective, at which point they can be considered
Selecting best-fit enterprise grade solution
The IDP software market today majorly comprises two types of solutions: package-based and platform-based

Types of solutions in IDP software market

Package-based solutions
Refers to the IDP software solutions offered as package or closed solutions, where the vendors or the implementation partners will predominantly oversee the customization, configuration, and deployment of the solution

- **Pros:**
  - Dedicated resources and solutioning experts can assist enterprises in deploying the product across complex use cases
  - Consistency in terms of accuracy and performance

- **Cons:** Inability to build new use cases or tinker with existing ones

Platform-based solutions
Denotes the IDP software solutions offered as platforms (can be part of a larger intelligent automation platform), which AI-savvy enterprise users can use to build and deploy specific use cases themselves, or with support from the vendor or implementation partners

- **Pros:**
  - Enterprises can build use cases on their own
  - Allows for experimentation with choosing the best-fit models and greater degree of control

- **Cons:** Given the current state of maturity and scarcity of skilled resources, most enterprises end up having to use external support for new use cases, thereby diluting the promise of a platform solution

Currently, both models are viable in the market. Given the scarcity of skilled resources today, most platform solutions end up being made available as package-based solutions, except in the case of mature enterprises with dedicated data science talent.
Selecting best-fit enterprise grade solution

Key factors to consider when selecting an enterprise-grade IDP solution

- Solution capability
- Ecosystem of partners for collaborative technologies
- Ecosystem of services partners
- Product training and support
- Commercial models
## Selecting best-fit enterprise grade solution

### Solution capability

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Brief on the capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image pre-processing</td>
<td>Improves quality of images and handwritten documents with features such as auto crop, background editor, and noise reduction.</td>
</tr>
<tr>
<td>Document classification</td>
<td>Refers to automatic classification and sorting of incoming documents and the ability to route them to desired destinations.</td>
</tr>
<tr>
<td>ML &amp; deep learning algorithms</td>
<td>Built-in ML &amp; deep learning algorithms for image pre-processing, document classification, data extraction, and training of the software are the core of IDP solutions. Some vendors have developed proprietary models, while others use common algorithms such as CNN, RNN, SVM, Markov chains, and Naïve Bayes.</td>
</tr>
<tr>
<td>NLP</td>
<td>With the help of NLP, IDP solutions can analyze the running text in documents, understand the context, consolidate the extracted data, and map the extracted fields to a defined taxonomy. It also helps in recognizing the sentiments from the text (e.g., from emails and other unstructured data) and classifying into different categories.</td>
</tr>
</tbody>
</table>
### Selecting best-fit enterprise grade solution

**Solution capability**

#### Other technology/product capabilities

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Brief on the capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration and set-up GUI</td>
<td>Allows administrators to add new use cases, define fields that need to be extracted, upload the documents by batches, manage user access controls, customize the accuracy thresholds for classification &amp; extraction of fields, and modify business validation rules.</td>
</tr>
<tr>
<td>Review GUI</td>
<td>The interface of the platform where processed documents are reviewed. It displays the confidence level for classified &amp; extracted fields that failed to meet the defined thresholds, highlights fields that violate business rules or fields with incorrect/missing data, and allows business users to manage the work queue of processed documents.</td>
</tr>
<tr>
<td>Analytics dashboard</td>
<td>Analytics dashboard provides a view of multiple document processing projects and allows tracking of various parameters such as STP rate, process-level SLAs, batch-level &amp; field-level processing, manual worker performance, number of errors fixed, and time taken to fix the errors.</td>
</tr>
<tr>
<td>Workbench for enterprise IT users</td>
<td>Workbench allows enterprise IT users to manage the workflow of processes, access ML libraries, and integrate RPA capabilities. It gives flexibility to experiment on the best-fit ML algorithms for different use cases.</td>
</tr>
<tr>
<td>Unstructured document processing</td>
<td>Classify and extract data fields from unstructured documents such as emails, documents with free-flowing text, images, etc. It can further conduct sentiment analysis, topic identification, entity extraction, and intent analysis on such documents.</td>
</tr>
<tr>
<td>Processing different data types</td>
<td>Allows users to process and extract data types of varying complexities. Low-medium complexity data types include printed text, tables, barcodes, and block handwriting, whereas high complexity data types include logos, signatures, freestyle handwriting, and charts.</td>
</tr>
</tbody>
</table>
Selecting best-fit enterprise grade solution

Solution capability

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Brief on the capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-trained solutions</td>
<td>Pre-trained, out-of-the box solutions come with reasonable accuracy (~70-80%) for common use cases such as invoice processing. These are generally trained by ingesting a variety of documents for a particular domain or use case into ML models. It significantly reduces initial training time &amp; effort and allow enterprises to start production quickly.</td>
</tr>
<tr>
<td>Security features</td>
<td>Security features of IDP solutions include ability to encrypt, hide, or redact confidential data fields using various technologies before review, role-based access control for various features, and adherence to enterprise IT security standards &amp; regulatory compliance requirements.</td>
</tr>
<tr>
<td>Hosting</td>
<td>IDP solutions can be deployed on cloud, on-premise servers, and desktops. Cloud is the most widely adopted deployment mode, whereas on-premise and desktop deployment could be considered by industries such as BFSI and healthcare in use cases with stringent data security and compliance requirements. Given the growing demand for cloud, vendors are increasingly moving towards a cloud-native architecture with containerized microservices.</td>
</tr>
<tr>
<td>Pre-built connectors</td>
<td>Pre-built connectors allow the IDP platform to integrate and communicate directly with third-party applications such as BI platforms, ERP systems, and other legacy information systems.</td>
</tr>
<tr>
<td>Mobile capture</td>
<td>Ability to directly upload low-quality documents from mobiles for processing. It ensures quality of images captured at source through features such as real-time feedback and user guidance. Certain IDP solutions also have the ability to process incoming documents and images from mobile device.</td>
</tr>
<tr>
<td>Multi-lingual</td>
<td>Availability of multi-language support for extraction and user interface. Increasingly, IDP solutions for non-Latin scripts are also coming into play. Few vendors are also able to identify and process multiple languages within the same document.</td>
</tr>
<tr>
<td>document processing</td>
<td></td>
</tr>
<tr>
<td>User interface</td>
<td>An easy to use and intuitive user interface with low code/no code features, drag and drop functionality, etc., helps in reducing the time taken in training resources, achieving higher adoption, and enabling general business users to use the IDP solution.</td>
</tr>
</tbody>
</table>
Selecting best-fit enterprise grade solution
Ecosystem of partners for collaborative technologies

Why technology partner ecosystem is an important consideration for enterprises while choosing an IDP vendor
- IDP solutions are capable of extracting data from complex documents, but they can be combined with complementary technologies such as RPA, BPM, and other AI technologies to perform end-to-end automation
- Solutions packaged with IDP and RPA help enterprises improve operational efficiency & increase cost savings
- If an enterprise’s chosen IDP vendor can provide access to a broad partner ecosystem for collaborative technologies, it would help the enterprise to expand its automation capabilities in an expedient fashion. It would reduce the hassle to reconfigure the deployment and integrate with collaborative technologies
- Some IDP vendors partner with providers of best-in-class AI technologies such as NLP and OCR to provide flexibility to enterprises

What a robust partner ecosystem of collaborative technologies means for enterprises and IDP vendors

Key value propositions
- Explore available RPA, BPM, and other AI solutions
- Realize the full potential of intelligent automation
- Eliminate vendor lock-in by accessing multiple RPA and AI solutions
- Leverage pre-defined integrations with other solutions

Key value propositions
- Integrate with a wide spectrum of solutions
- Provide end-to-end automation to enterprises
- Gain competitive advantage
- Expand the scope of benefits of their offerings
## Selecting best-fit enterprise grade solution

### Ecosystem of services partners

<table>
<thead>
<tr>
<th>Why training partners are important for enterprises while choosing an IDP vendor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Training partners provide their implementation and training expertise to help enterprises configure and deploy IDP solutions</td>
</tr>
<tr>
<td>• Since IDP solutions are evolving rapidly, training partners are required to train employees on new features/capabilities of the solution</td>
</tr>
<tr>
<td>• In order for enterprises to achieve global scale of deployments, they need trainings to be available in a variety of languages. This is one of the key value propositions that they bring to the table</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Why implementation partners are important for enterprises while choosing an IDP vendor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Implementation partners include system integrators that help enterprises in implementing IDP solutions and overcoming challenges in deployment</td>
</tr>
<tr>
<td>• They can also be leveraged to overcome challenges in areas such as governance, business case realization, and scaling up</td>
</tr>
<tr>
<td>• Enterprises can also leverage them to set up automation CoEs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Why BPO partners are important for enterprises while choosing an IDP vendor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Many IDP vendors offer the option of a managed-services construct through partnerships with leading BPO providers</td>
</tr>
<tr>
<td>• Enterprises can choose to outsource the human-in-the-loop and validation activities to a BPO partner</td>
</tr>
<tr>
<td>• This can significantly reduce the time taken for implementation and eliminates the need to train employees</td>
</tr>
</tbody>
</table>
Selecting best-fit enterprise grade solution

Product training and support

Two main tenets of product training and support

Robust product support and maintenance services

- Product support and maintenance are very important for a smooth journey experience and hence, enterprises should look for an IDP vendor that offers robust and continuous product & maintenance support
- Uniform product update/release cycles and maintenance services help enterprises avoid/minimize challenges with their deployments, especially when IDP is being used for multiple processes. An enterprise’s IT and operations department should not be burdened with issues resulting from inadequate product support, but rather be assisted to ensure the most efficient use of limited resources

Easy access to comprehensive product training

- Since the market is in an early stage, most vendors provide in-person or classroom training to enterprises, but some vendors have started to offer online training courses
- Self-paced online training courses with robust training documentation that can be downloaded and viewed offline allow enterprises to accelerate their learning curve & usage, and hence should be considered while selecting an IDP vendor
- Many vendors are also developing online community ecosystems where users can interact with each other for brainstorming and troubleshooting. Platforms may also come with embedded help tools to help learn on the job
Selecting best-fit enterprise grade solution

Commercial models

Subscription-based pricing models

- **Volume-based licensing**: Enterprises pay on a monthly or annual basis, depending on the volume and complexity of the documents. This may be on a per page or per document basis.

- **Per-process-based model**: Enterprises pay on a per-process or per-case basis, irrespective of the number of pages processed in the use case. The price of the use case depends on various factors such as complexity.

- **Fixed-fee model**: Each installation is licensed monthly/annually to operate on a single machine, irrespective of the number of documents/processes handled by the IDP product. This makes it cost-effective for some enterprises.

Progressive pricing model

- **Outcome-based pricing**: Mutually-agreed pricing based on the quality of output or outcomes (e.g., minimum STP rate or accuracy rate), typically observed when IDP solutions are included as part of the broader BPS/IT contracts.

Perpetual pricing model

- **One-time fee model**: This requires enterprises to pay a one-time upfront fee to purchase a perpetual license and an annual maintenance fee. While it might result in higher savings in the long run, an increasing need for flexibility to scale has driven down the adoption of this model.
While assessing an IDP vendor, enterprises should consider the vendor’s investment and product roadmap to ensure a smooth journey in the future

Vendor’s investments and product roadmap

Technology
Enterprises should consider IDP vendor’s future investments in the solution/technology such as NLP & other cognitive capabilities and assess whether it aligns with their objectives.

Processes and use cases
Knowing the processes, document types, and data types for which data can be extracted in the future, is an important factor while selecting an IDP partner. Enterprises should also consider the roadmap for pre-built solutions, additional languages supported, etc.

Technology partnerships
IDP vendors that have technology partnerships with best-in-class intelligent automation solution providers help enterprises in their automation journey.

Training & support
Future roadmap of training & support for new use cases, product upgrades, etc., are essential to continue a smooth journey in the future.
05

Challenges and best practices

- Challenges
- Best practices
  - Talent management
  - Change management
  - Preparedness and performance monitoring
  - Governance and expectations alignment
  - Data availability
  - Role of CoE
- Case study
# Challenges

<table>
<thead>
<tr>
<th>Availability of data for training</th>
<th>Internal resistance</th>
<th>Lack of understanding of IDP solution</th>
<th>Expectation mismatch</th>
<th>Difficulty in estimating total benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some processes require large volumes of sample data to train the solution to attain the desired accuracy levels</td>
<td>Resistance in acceptance &amp; adoption of AI and related digital transformation initiatives</td>
<td>Buyers’ lack of understanding of AI technologies and how they solve business problems</td>
<td>Successful implementation of IDP solutions depends on the complexity of use cases. Enterprises, especially business users, sometimes expect unrealistic ROI from IDP solutions due to their lack of understanding of ML-based solutions and the hype in the market. Hence, the scope of project and expectations should be clearly defined upfront</td>
<td>It is difficult for enterprises to estimate the overall benefits to develop a business case due to various factors such as variability in training and human-in-the-loop construct</td>
</tr>
<tr>
<td>Creating a repository of previous data and preparing it for training is a task in itself, which sometimes hampers smooth adoption of IDP solutions</td>
<td>Resistance from operations team for a new solution</td>
<td>Enterprises’ inability to distinguish between IDP and OCR-/template-based solutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training algorithms depend not only on the volume of data, but also the associated structured values for training purpose. These factors significantly affect the training approach. Variance mix of data and resolution of images received for training purposes impacts the accuracy level of solutions at production</td>
<td>Buy-in of all teams is necessary for successful implementation</td>
<td></td>
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</tr>
</tbody>
</table>

- Some processes require large volumes of sample data to train the solution to attain the desired accuracy levels
- Creating a repository of previous data and preparing it for training is a task in itself, which sometimes hampers smooth adoption of IDP solutions
- Training algorithms depend not only on the volume of data, but also the associated structured values for training purpose. These factors significantly affect the training approach. Variance mix of data and resolution of images received for training purposes impacts the accuracy level of solutions at production
Best practices

- Talent management
- Change management
- Preparedness and performance monitoring
- Governance and expectations alignment
- Data availability
- Role of CoE
Best practices | talent management (page 1 of 2)

Types of talent categories required for successful IDP implementation

## Talent categories

<table>
<thead>
<tr>
<th>Team composition</th>
<th>Project managers</th>
<th>Administrators / Business analysts</th>
<th>Operation specialists</th>
<th>IT specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largely external with external support</td>
<td>They lead the overall project and are responsible for managing various stakeholders</td>
<td>This talent has good understanding of business processes and makes adjustments to the software for desired results</td>
<td>Typically consists of operations talent who extract data and review the errors</td>
<td>IT specialists manage the deployment from the technology perspective</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>Internal</td>
<td>Largely internal with internal support</td>
<td></td>
</tr>
</tbody>
</table>

Skill sets required for each of the categories are different.
Best practices | talent management (page 2 of 2)
Training and development

- Initial orientation of project managers and administrators/BAs to understand IDP solutions and how ML can increase efficiency helps in aligning the talent to the change
- Better awareness helps in engaging business resources better in automation initiatives

- Conducting dedicated training via classroom or online sessions for administrators/business analysts and operation specialists to provide them hands-on training on IDP solution is a very effective way to transition existing talent to get used to IDP solutions
- It takes two to four weeks to train employees on the IDP solution so that they can start using it themselves

Online support forum and help guides are useful for business analysts and operations specialists for quick resolution of their queries
Best practices | change management (page 1 of 2)

Key factors in a change management program

<table>
<thead>
<tr>
<th>Communication</th>
<th>Getting buy-in from executive management &amp; other support teams</th>
<th>Setting up robust metrics to monitor impact of IDP</th>
<th>Alignment between IT and business functions</th>
<th>Process ownership</th>
<th>Training programs (reskilling and upskilling)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication should follow a two-pronged approach – one from the top management indicating organization-wide initiatives and other being tailored and personal to improve involvement of end users in the IDP journey</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Strategic focus and executive backing lend direction to the IDP journey</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Low or late buy-in from executive management may slow the implementation process. Thus, gaining key stakeholders’ support is critical</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>• One of the important parameters in determining the success of IDP lies in continuously evaluating its performance</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify and redefine existing metrics to continuously monitor and measure impact of IDP initiatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Challenges arise when the IT teams and business functions are not aligned on objectives/expectations</td>
<td></td>
<td></td>
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<tr>
<td>• Clear alignment between IT and business right from the start and proper division of responsibilities between business and IT teams leads to a smooth IDP journey</td>
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<tr>
<td>• Change or confusion in management may lead to a delay in the transformation</td>
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</tr>
<tr>
<td>• Process ownership and drive by management generates support and push for employees to take the transformation journey seriously</td>
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</tr>
<tr>
<td>• Training resources to operate with IDP by educating them on usage of IDP solutions and associated benefits is critical</td>
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</tr>
<tr>
<td>• Identifying the impact of IDP implementation on existing resources and planning an alternate path for impacted resources through reskilling / upskilling is essential</td>
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</tr>
</tbody>
</table>
Best practices | change management (page 2 of 2)
Robust change management is important for a smooth journey and faster implementation

- Improves employee engagement and support in the IDP journey
- Enables quicker time to production from pilot
- Increases business and IT alignment early on to set expectations and accelerate IDP implementation
- Enables smooth transition and avoids disruptions in services

Benefits of change management
Best practices | preparedness and performance monitoring
Preparing data environment, identifying, or revamping the existing KPIs or metrics are essential to ensure a successful IDP journey

Preparedness and performance monitoring
- Proactively identify and define KPIs to measure and monitor effectiveness and impact of IDP solutions
- Continuously monitor and revise KPIs and raise the bar to increase ROI from IDP measures
- Enterprises should take measures to collect and centrally manage all relevant documents and data required for training purposes

Illustrative metrics

**Preparedness**
- Audit trail for data protection and privacy
- Ensuring data protection and privacy according to compliance requirements
- Ensuring availability of training data

**IDP impact**
- Cost savings
- ROI
- Productivity
- Employee experience
- Impact on broader automation

**Effectiveness of IDP**
- Number of documents processed
- Utilization
- Speed of training/implementation
- STP rates
- Accuracy rates
- Efficiency/effectiveness of training algorithms
Best practices | governance and expectations alignment

Well-structured governance and funding mechanisms and aligning with business units on expectations from IDP initiatives play a key role in the success of an enterprise’s IDP journey

Governance and funding
- Centrally governed/funded IDP initiatives with high degree of involvement from CXOs help in accelerating IDP implementations across business functions
- Proactive involvement of business units right from the start of the IDP journey including evaluation, identification, and prioritization of high potential areas for IDP implementation is essential in addressing key pain points of business units
- In case of limited funding options, enterprises can consider self-funding the initiatives from cost savings accrued from previous initial IDP projects to expand the scale, scope, and coverage of IDP solutions

Aligning expectations
- While business units are involved in IDP initiatives, enterprises should take proactive measures to educate and create awareness on AI-based technologies and their business implications
- It is essential to set realistic expectations on STP rate, accuracy level at production and target accuracy level over time, and the approximate time taken to achieve ROI with business units and leadership to avoid any misalignment and to obtain their support in scaling up IDP projects
Best practices | data availability

Availability of training documents is key to derive the maximum benefits from IDP solutions. Historical documents, representing most of the variations in document types encountered in operations, are essential to train the model to achieve better accuracy at production.

While volume and variations are important, availability of corresponding structured values for the sample documents are also essential in training the model.

A formal and well-structured centralized data management practice will help to expand the scope and scale quickly, as documents can be used for training the model for other use cases.
Best practices | role of CoE

Increasing level of maturity

1. Siloed IDP team
   - Central data capture team manages IDP projects in collaboration with business units and IT team (for implementation), with limited support from automation CoE.

2. Collaboration with automation CoE
   - Data capture team works closely with automation CoE to align IDP initiatives with broader automation initiatives.

3. IDP team embedded into automation CoE
   - As the IDP journey matures, the IDP team is eventually embedded into automation CoE, and cross-skilling of resources (e.g., RPA and IDP) within the CoE can take place.
Best practices | role of CoE
The why and how of setting up a CoE

<table>
<thead>
<tr>
<th>When is a CoE set up and why is it needed?</th>
<th>What services does a CoE offer?</th>
<th>How should a CoE be set up?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A CoE provides a strong centralized structure and governance for IDP-related aspects within various departments, ensuring strategic connections with all the stakeholders involved, providing a forum to share resources and discuss some of the challenges and best practices</td>
<td>• CoE is typically responsible for maintaining development standards and proven practices and trends, and for centralizing resources</td>
<td>• The current maturity of CoEs: Many enterprises are in the piloting phase and do not have a dedicated CoE for intelligent automation operations. There is a model wherein the IDP teams / Subject Matter Experts (SMEs) from individual business units collaborate to establish certain standards and lead IDP initiatives – typically in a reactive fashion</td>
</tr>
<tr>
<td>• It encourages use of existing extraction and classification models, prevents inconsistency of the content created, and ensures standardization of the processes. It identifies and reduces duplication of effort across initiatives within the enterprise, thus further improving ROI</td>
<td>• It can track, measure, and report performance of key metrics, essential while comparing developments and deficiencies in adopting IDP across business units/functions. This could also help in demonstrating success of the IDP initiative to the upper management or C-level executives</td>
<td>• CoE structure for organizations that are ahead in IDP maturity:</td>
</tr>
<tr>
<td>• It is beneficial to set up a CoE during scaling up when there are numerous processes for which IDP is being used, the number of document types is large, and when more than one Business Unit (BU) of the organization is involved</td>
<td>• CoE can also play a role in identifying opportunities for IDP implementation within the organization and help drive those initiatives to completion</td>
<td>– <strong>Centralized CoE operations</strong>: CoE operates out of a central location. This team is responsible for the program governance and leads IDP initiatives for the entire organization</td>
</tr>
<tr>
<td></td>
<td>• It also helps in governance, value management, training, education, and spreading awareness of IDP, its benefits, and success stories</td>
<td>– <strong>Hub and spoke model</strong>: The hub / central team is responsible for all the strategic activities and governance. The dedicated IDP teams / SMEs within individual business units, act as spokes, and are responsible for carrying out operations for the respective BUs (contextualized to the BU)</td>
</tr>
</tbody>
</table>
Best practices | role of CoE
There are different CoE models adopted by enterprises that are well ahead in IDP maturity, the most common of which are centralized and hub & spoke.

Centralized CoE model

The centralized CoE handles all the strategic and operational functions for all the IDP initiatives across the organization.

Hub & spoke CoE model

The central hub handles the strategic functions. The spokes are IDP teams that are aligned to individual BUs to handle operational functions.
## Best practices | role of CoE
While centralized CoE offers strong governance and standardization, the hub & spoke CoE model provides greater local knowledge and specialization

<table>
<thead>
<tr>
<th>Centralized CoE</th>
<th>The hub and spoke CoE model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td><strong>Advantages</strong></td>
</tr>
<tr>
<td>• The centralized CoE can liaise with various corporate functions and involves the relevant stakeholders to create the organization’s IDP capabilities</td>
<td>• The central hub will play a role in creating the core IDP capabilities and governance mechanism at the corporate level, which the spokes can leverage to operationalize IDP in their respective BUs</td>
</tr>
<tr>
<td>• It can maximize adherence to corporate IDP policies, governance, and management reporting by having all the staff under one roof and following the required procedures</td>
<td>• The spokes can develop new use cases for IDP, complemented with their local or functional knowledge</td>
</tr>
<tr>
<td>• There will be stronger coordination and communication between strategic and operational activities such as adding new document types, training, and testing models for various IDP initiatives</td>
<td>• The spokes can develop new IDP use cases in adherence with local policies and procedures and can specialize in deploying models that are applicable only in their respective BUs</td>
</tr>
<tr>
<td>• It can result in cost efficiency, with only one center to run and manage</td>
<td>• For non-specialized IDP use cases, resources can be pooled/shared and run from the central hub</td>
</tr>
<tr>
<td><strong>Considerations</strong></td>
<td><strong>Considerations</strong></td>
</tr>
<tr>
<td>• A centralized CoE can become too rigid in its pursuit of adherence to policies and procedures</td>
<td>• Availability of IDP talent may be limited in certain BUs</td>
</tr>
<tr>
<td>• It can become too inward-looking and miss out on new IDP opportunities or business innovation</td>
<td>• May be more challenging to standardize policies</td>
</tr>
<tr>
<td>• Sometimes, it can become too remote from BUs to fully understand their needs and differences</td>
<td>• Greater effort is required to manage ongoing communications, training, and policy updates</td>
</tr>
<tr>
<td></td>
<td>• There may be duplication of knowledge, which can minimize the benefits of the shared mode</td>
</tr>
</tbody>
</table>
Case study | University of Southern California
A leading university is leveraging IDP to improve operational efficiency

Overview
University of Southern California, a leading private research university based in Los Angeles, California, carried out a self-assessment study to determine the different areas where AI can be leveraged to further streamline its operations. The USC Business Services department, which was already in the process of implementing a new financial management system, was identified as a potential area to implement an IDP solution to digitize and automate its invoice intake process.

The department receives over 300,000 invoices in a year with over 10,000 a week during peak volume, of which about half have to be processed manually before being passed on to downstream applications for further processing. Furthermore, the university has a wide base of over 25,000 vendors because of which it receives invoices in a variety of styles ranging from scanned images to documents with handwritten text. The university decided to partner with AntWorks for its IDP platform to minimize manual intervention in invoice processing, reduce errors and turnaround time, and make faster payments to its vendors, while freeing up its employees’ time for higher value work.

Challenges
- The department had previously tried to implement a different IDP solution, however, the initiative failed as the solution was unable to scale up and cater to the volumes required
- Due to the rigidity of the downstream financial management solution, several customizations needed to be made to the IDP solution to accommodate downstream requirements
- Over 3000 campus staff had to be educated on the best practices to adopt while sending invoices such as not writing on top of the invoices and maintaining scan quality

Benefits
- The IDP solution has been able to extract information from various invoice types including handwritten text with reasonable accuracy, thus considerably reducing human intervention
- The solution was deployed on the university's private cloud, thus easing the security and compliance requirements while speeding up the implementation time
- With the initial learnings and successes, the university plans to expand adoption of IDP as well as RPA to address more use cases such as legal contracts and cardholder agreements

Learnings / winning insights
- Be clear with the requirements and expectations from the IDP solution. Ensure that requirements in terms of solution scalability are also adequately addressed during the POC
- Build clarity on the requirements of downstream systems early on to ensure a smooth integration with the IDP solution
- Having control over input image quality has a significant impact on the accuracy level of extraction. Educate relevant stakeholders on best practices to adopt while sending documents
- During implementation, having separate environments for development, testing, and production ensures that any changes in development do not slow down the testing process and overall implementation of the solution
06 Future outlook
Outlook for 2021-22 (page 1 of 2)

Accelerated demand post recovery

- The IDP technology vendor market was negatively affected due to the COVID-19 crisis. However, as the economy recovers, the IDP market is experiencing accelerated demand, driven by increasing need for enterprises to adopt automation solutions for processing large volumes of semi-structured and unstructured documents with greater accuracy and speed
- Greater awareness about the prevalent use cases has paved the way for broader adoption of IDP solutions

Adoption by industries

- Industries, such as manufacturing as well as travel and logistics, which were severely affected due to the COVID-19 crisis, are expected to post lower growth of IDP adoption in the near-to-medium term
- Accelerated adoption of IDP solutions is expected in industries such as healthcare, telecom, and government & public sector, that have been able to recover relatively faster

Go-to-market strategy

- IDP vendors are expected to offer more out-of-the-box, pre-trained IDP solutions to meet the demand for faster ROI and quicker deployment
- Progressive pricing models, such as outcome-based pricing based on STP rates, will become more prevalent as the enterprises are likely to demand flexible and progressive pricing options with smaller upfront outlays
- Given the prevalence of remote work, more IDP vendors are expected to offer online support for training and user guidance through embedded help tools, detailed manuals, and user communities
Outlook for 2021-22 (page 2 of 2)

**Increase in partnerships**

- As the demand for end-to-end automation solutions goes up, partnerships among RPA, IDP, and process mining vendors to provide integrated solutions to their clients are expected to rise.
- Increase in the number of strategic partnerships of IDP vendors with service providers and system integrators for services such as reselling, training, consulting, and implementation is expected.

**Technology trends**

- The COVID-19 crisis has led to more openness among enterprises to adopt cloud-based services, including the private cloud deployment option, which is expected to grow further.
- NLP technology in IDP solutions is expected to get more advanced to address complex unstructured document use cases, which may include understanding running text, context, and sentiments, consolidating the extracted data, and mapping the extracted fields to a defined taxonomy.
- IDP solutions are expected to provide greater control and configurability in terms of enterprise-grade features such as configuration & set-up GUI, review GUI, workbench for IT users, and analytics dashboard.
- Advances in the mobile IDP technology are expected to pick up.
- Availability of multi-language support for extraction and user interface is expected to increase with greater adoption of IDP solutions.
- Further innovation and continuous development is expected on core AI technology, including greater use of GANs, weak supervision, and transfer learning, to make the AI pieces more efficient.

**Mergers and acquisitions**

The market may undergo an accelerated consolidation phase with mergers and acquisitions taking place amongst various providers.
Appendix

- Enterprise IDP capability maturity model
- Environmental determinants
- Variance in execution path steps for organizations by environmental determinants
- Glossary of terms
## Enterprise IDP CMM

<table>
<thead>
<tr>
<th>Capability elements</th>
<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary drivers of IDP adoption</td>
<td>Business case focused on generating quick cost savings</td>
<td>Business case focused on increasing workforce productivity, efficiency, and quality along with generating cost savings</td>
<td>Business case is focused on improving governance &amp; compliance along with increasing productivity, efficiency, quality, and business resilience, as well as generating cost savings</td>
<td>Business case focused on employee experience, disrupting business model with holistic and futuristic view of digital landscape evolution along with improving governance &amp; compliance, employee experience, efficiency, quality, and business resilience, as well as generating cost savings</td>
</tr>
<tr>
<td>Funding/ sponsorship</td>
<td>Primarily sponsored/funded by local/regional business unit budget</td>
<td>Primarily sponsored/funded by the global shared services budget</td>
<td>Primarily funded by global business function’s budget</td>
<td>Primarily funded by the central enterprise budget; sponsorship from CXO</td>
</tr>
<tr>
<td>Project initiation</td>
<td>Siloed approach with no CoE support; mostly initiated by imaging/data capture team</td>
<td>Projects are initiated by local/regional business units with limited support from automation CoE</td>
<td>Projects are initiated by global business functions OR global shared services; multi-pronged approach with substantial support from the automation CoE</td>
<td>Projects are initiated by corporate OR global business functions OR global shared services; multi-pronged approach with robust CoE support</td>
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</tbody>
</table>
## Enterprise IDP CMM

### Vision & strategy

<table>
<thead>
<tr>
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<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
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</thead>
<tbody>
<tr>
<td>Security and risk preparedness for IDP</td>
<td>No major changes made to security and risk policies and worked around existing ones to accommodate changes required for IDP</td>
<td>Some changes to security and risk policies were made to accommodate IDP environments and scenarios</td>
<td>Proactively evaluated and planned for mitigation of security and compliance risks associated with IDP and associated AI deployments; set up unique risk management protocols and controls for IDP and AI deployments</td>
<td>Included security and risk leaders in IDP projects to proactively evaluate and plan for mitigation of security and compliance risks and unique requirements essential for IDP and associated AI deployments</td>
</tr>
<tr>
<td>Targeted document types for IDP adoption</td>
<td>Template-based documents (data in pre-defined template)</td>
<td>Template-based documents and documents with significant semi-structured data with limited variations</td>
<td>Template-based high volume documents and documents with significant semi-structured data with high variations</td>
<td>Template-based high volume documents and significant unstructured data (large multi-page documents such as legal contracts, low quality images, checks, and handwritten documents)</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

### Capability elements

<table>
<thead>
<tr>
<th>Metrics and KPIs for measuring benefits/impact of IDP (such as cost savings, ROI, speed, productivity, accuracy, compliance, and employee experience)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic</strong></td>
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<tr>
<td><strong>Typical</strong></td>
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</tr>
<tr>
<td><strong>Pinnacle</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Metrics and KPIs for measuring the effectiveness of IDP initiatives (such as accuracy rate, speed of configuration/implementation, STP rate, time taken to process a document, and number of documents processed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic</strong></td>
</tr>
<tr>
<td><strong>Typical</strong></td>
</tr>
<tr>
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<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDP team structure</td>
<td>No dedicated IDP team within the organization; largely handled by existing imaging / data capture</td>
<td>Decentralized structure; each business unit forms a dedicated team for IDP initiatives leveraging both existing imaging / data capture team and additional skill sets</td>
<td>Centralized dedicated IDP team that defines and implements IDP initiatives for the entire organization</td>
<td>IDP team embedded in automation CoE that can either be centralized or decentralized (hub &amp; spoke model) to cross leverage skill sets to implement IDP initiatives</td>
</tr>
<tr>
<td>Scope of automation CoE</td>
<td>Less than 30% of IDP projects are governed by the CoE</td>
<td>Around 30-60% of the IDP projects are governed by the CoE</td>
<td>Around 60-80% of the IDP projects are governed by the CoE</td>
<td>More than 80% of the IDP projects are governed by the CoE</td>
</tr>
<tr>
<td>Primary use of performance data</td>
<td>Monitoring performance of IDP applications</td>
<td>Monitors performance of IDP applications; refines the model to improve accuracy</td>
<td>Monitors staff productivity along with performance of IDP applications locally to find gaps in existing processes to optimize and streamline them to increase efficiency</td>
<td>Analyzes performance data centrally to identify gaps in existing algorithms and proactively refine the model across business functions / regions to improve accuracy and STP rates</td>
</tr>
<tr>
<td>Focus on tracking/optimizing</td>
<td>Collection and usage of performance and impact data are ad hoc, sporadic, and uncoordinated</td>
<td>Performance and impact data is collected periodically (quarterly) to produce reports and dashboards to gain new insights that improve operational efficiency</td>
<td>Performance and impact data is collected periodically (monthly) to produce reports and dashboards to gain new insights that improve operational efficiency and enhance efficacy of training algorithms</td>
<td>Performance and impact data is regularly collected/monitored weekly and used in a coordinated fashion to make operational decisions</td>
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<tr>
<td>effectiveness and benefits achieved</td>
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</tbody>
</table>
## Enterprise IDP CMM

### Organization structure

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<tr>
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<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roles and responsibilities of the CoE</td>
<td>Drive the roll-out and implementation of IDP projects and ensure coordinated communication with relevant stakeholders; loosely defined roles, responsibilities, and skill sets required</td>
<td>Ensuring quality and compliance through well-defined standards, procedures, and guidelines, owned and developed by the CoE for broader digital initiatives; drives the roll-out and implementation of IDP projects and ensure coordinated communication with relevant stakeholders; some key roles and responsibilities are well-defined</td>
<td>Approves all IDP procedures before they are put into deployment, assesses suitability of IDP vs. other document processing tools for use cases, and ensures quality and compliance through well-defined standards, procedures, and guidelines, owned and developed by the CoE for broader digital initiatives; drives the roll-out and implementation of IDP projects and ensures coordinated communication with relevant stakeholders; well-defined roles, responsibilities, and skill sets required</td>
<td>Cross-leverage of automation/AI training and education program to develop talent for IDP initiatives; approves all IDP procedures before they are put into deployment, assesses suitability of IDP vs. other document processing tools for use cases, and ensures quality and compliance through well-defined standards, procedures, and guidelines owned and developed by the CoE. Drives the roll-out and implementation of IDP projects and ensures coordinated communication with relevant stakeholders; well-defined roles, responsibilities, and skill sets required that are regularly reviewed and optimized</td>
</tr>
<tr>
<td>Reusability of models</td>
<td>No reusable models</td>
<td>Reusability of models is limited to business units</td>
<td>Reusability of models across business units and geographies</td>
<td>Reusability of models across business units, geographies, and similar document types (through transfer learning)</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

### Capability elements

<table>
<thead>
<tr>
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<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of employee engagement</td>
<td>Few people proactively engaging in some of the IDP initiatives</td>
<td>More believers who engage in IDP initiatives</td>
<td>Organization-wide employee engagement; some internal experts to facilitate engagement; developing a culture of innovation and design thinking</td>
<td>IDP initiatives are recognized as an integral component of the broader digital strategy (automation/AI); rewards system for contribution; Integrated culture for design thinking and innovation</td>
</tr>
<tr>
<td>Nature of impact on employees</td>
<td>No attempt to redeploy/reskill/upskill employees released due to IDP initiatives</td>
<td>Modest attempts made to redeploy employees released due to IDP initiatives in other areas (such as minimal investment and management commitment)</td>
<td>Significant attempts made to reskill and redeploy employees released due to IDP initiatives by providing alternate career paths (for example, education program set up for reskilling)</td>
<td>Significant attempts made to reskill/upskill employees released due to IDP initiatives to do higher value work and provide alternate career paths in broader automation initiatives (for example, education program set up for reskilling and upskilling)</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

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<tr>
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<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software learning</td>
<td>No training data sets are generated from manual review</td>
<td>Automatic generation of training batches during manual review; automatic feeding of data sets into the system for training</td>
<td>Automatic generation of training batches during manual review along with feature for enterprise users to approve training sets to improve accuracy</td>
<td>Automatic generation of training batches during manual review along with feature for enterprise users to approve training sets to improve accuracy; approval mechanism at admin level as well</td>
</tr>
<tr>
<td>Classification of documents</td>
<td>Do not have the ability to automatically classify documents</td>
<td>Ability to identify discrete documents with low accuracy, leveraging basic statistical approach</td>
<td>Ability to identify discrete documents with medium accuracy, leveraging basic ML-based approach</td>
<td>Ability to identify discrete documents and different pages within a stream of documents with high accuracy, leveraging advanced neural networks</td>
</tr>
<tr>
<td>Flexibility with ML algorithms</td>
<td>One fixed pre-built ML algorithm for every use case / document type</td>
<td>Different pre-built ML algorithms for different use cases / document types</td>
<td>Different pre-built ML algorithms for different use cases / document types with an option for user to select the appropriate algorithm</td>
<td>Feature to recommend best ML algorithm to user to choose from different pre-built algorithms</td>
</tr>
<tr>
<td>Sophistication of document processing</td>
<td>Basic OCR for digitizing content</td>
<td>OCR- and ML-based; document classification, data capture, and extraction using machine learning and validation</td>
<td>OCR, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, auto ML, NLP, intent analysis, and validation</td>
<td>OCR, domain ontology, deep learning, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, intent analysis, and validation</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

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<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity of data handled</td>
<td>Block letters (typed)</td>
<td>Block letters (typed) and tables</td>
<td>Block letters (typed or handwritten), checkboxes, bar codes, and logos</td>
<td>Block letters (typed or handwritten), checkboxes, bar codes, logos, stamps, charts, signatures, and cursive writing</td>
</tr>
<tr>
<td>Pre-built use cases</td>
<td>No pre-built use case</td>
<td>Simple use cases involving semi-structured data such as invoice processing, customer onboarding, and claims</td>
<td>Complex use cases involving unstructured data such as contracts, and legal documents</td>
<td>Use cases that involve extracting information from free-flowing text as well as NLG</td>
</tr>
<tr>
<td>Hosting type</td>
<td>Physical, desktop-based</td>
<td>On-premise, server-based</td>
<td>Private cloud-based, hybrid</td>
<td>Public cloud-based, hybrid</td>
</tr>
<tr>
<td>Ancillary technologies</td>
<td>Stand-alone IDP solution</td>
<td>IDP solution integrated with BPM tool and RPA</td>
<td>IDP solution integrated with BPM, RPA, and analytics</td>
<td>IDP solution integrated with BPM, RPA, analytics, and other AI solutions</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

### Talent management

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<thead>
<tr>
<th>Capability elements</th>
<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sourcing of IDP talent</td>
<td>Leverage only vendor resources</td>
<td>Leverage vendor resources and existing data capture / imaging resources with proper training on IDP</td>
<td>Leverage vendor resources, existing data capture / imaging resources, and limited automation resources</td>
<td>Leverage broader automation resources by cross-skilling IDP and automation resources, enabling resourcing across automation initiatives as per the required bandwidth</td>
</tr>
<tr>
<td>IDP training and education</td>
<td>Basic initial IDP training by vendors</td>
<td>Well-structured IDP internal training program in addition to initial training by vendors; focused on implications of IDP</td>
<td>Integrated external and internal, well-structured training programs that are continuously reviewed and optimized</td>
<td>Well-structured IDP internal and external training programs that are integrated with broader automation training programs that are continuously reviewed and optimized</td>
</tr>
</tbody>
</table>
## Enterprise IDP CMM

### Capability elements

<table>
<thead>
<tr>
<th></th>
<th>Basic</th>
<th>Typical</th>
<th>Advanced</th>
<th>Pinnacle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution of IDP projects by stage</td>
<td>Most of the IDP projects are in the planning stage</td>
<td>Most of the IDP projects are in the pilot stage</td>
<td>Most of the IDP projects are being scaled up from the pilot stage</td>
<td>Most of the IDP projects are in steady-state implementation stage</td>
</tr>
<tr>
<td>Scale of IDP adoption</td>
<td>Less than 10% of the viable documents leveraging IDP solutions</td>
<td>Around 10-30% of documents leveraging IDP solutions</td>
<td>Around 30-60% of documents leveraging IDP solutions</td>
<td>More than 60% of documents leveraging IDP solutions</td>
</tr>
<tr>
<td>Scope of IDP deployments across functions</td>
<td>One document categories</td>
<td>Two to four document categories</td>
<td>Five to eight document categories</td>
<td>More than eight document categories</td>
</tr>
<tr>
<td>Speed of IDP adoption</td>
<td>One IDP license per year on an average</td>
<td>Two to five IDP licenses per year on an average</td>
<td>Five to 10 IDP licenses per year on an average</td>
<td>More than 10 IDP licenses per year on an average</td>
</tr>
</tbody>
</table>
## Environmental determinants

<table>
<thead>
<tr>
<th>Environmental Determinant</th>
<th>Highly centralized, with some independent decision-making</th>
<th>Partially centralized with portions of decision-making federated to BUs</th>
<th>Largely federated decision-making – BUs have a large degree of freedom to make their own decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization structure</strong></td>
<td>Highly people-centric organization – the overall culture is people driven rather than efficiency driven</td>
<td>Middle-ground organization with focus on people as assets, with efficiency also playing a role</td>
<td>Efficiency- and/or technology-driven organization</td>
</tr>
<tr>
<td><strong>People centricity</strong></td>
<td>Operations-driven initiatives – driven by operations analysts trying to make their jobs easier</td>
<td>IT-driven initiatives with BU support</td>
<td>Centrally-driven, typically by the C-suite or one level below, with all BUs and IT falling in line</td>
</tr>
<tr>
<td><strong>Initiating stakeholder(s)</strong></td>
<td>Office-based workforce – FTEs working only from office locations</td>
<td>Hybrid – some FTEs working remotely while some working from office or FTEs working remotely as well as from office as required</td>
<td>Distributed workforce – FTEs working remotely</td>
</tr>
<tr>
<td><strong>Workforce location</strong></td>
<td>Low risk appetite – need to have multiple layers of checks and balances for any initiative</td>
<td>Medium risk appetite – willing to take risks in select scenarios, especially when dictated by the market</td>
<td>High risk appetite – willing to take risks in the hope of market leadership and payoff</td>
</tr>
<tr>
<td><strong>Risk appetite</strong></td>
<td>No existing automation partnerships</td>
<td>Medium risk appetite – willing to take risks in select scenarios, especially when dictated by the market</td>
<td>Existing partnerships with organizations that also play in the automation space</td>
</tr>
<tr>
<td><strong>Existing automation partnerships</strong></td>
<td>Documents are not maintained properly; few documents and associated values are available and accessible</td>
<td>Documents are managed properly; most of the documents are available, but the associated extracted values are not readily available</td>
<td>Documents are managed properly; most of the documents and associated extracted values are easily available and accessible</td>
</tr>
</tbody>
</table>
### Variance in execution path steps for organizations by environmental determinants

#### Planning

<table>
<thead>
<tr>
<th>Steps</th>
<th>Determinants</th>
<th>Path options</th>
</tr>
</thead>
</table>
| 1     | Identify and prioritize processes using the prioritization framework | • Risk appetite  
• Current outcome and capability | • Implement one process at a time  
• Implement logical groups of processes sequentially  
• Big bang implementation |
| 2     | Plan implementation timelines, governance, and skill development for IDP and reskilling affected employees | N/A | N/A |
| 3a    | Obtain alignment with IT for IDP implementation | N/A | N/A |
| 3b    | Obtain team buy-in, particularly impacted FTEs | People-centricity | • Open communication with the team – affected and unaffected members  
• Selective communication to impacted employees  
• Minimal communication |
| 4     | Select appropriate vendor tool based on capabilities required to achieve the desired outcome | • Existing automation partnerships  
• Risk appetite | • Leverage existing relationships  
• Evaluate other vendors while leveraging existing relationships  
• Evaluate the entire vendor landscape afresh |
| 5     | Obtain management buy-in and budget | • Organization structure  
• Initiating stakeholders | • Buy-in and budget at BU level  
• Buy-in and budget at IT  
• Buy-in and budget at central level |
# Variance in execution path steps for organizations by environmental determinants

## Piloting

<table>
<thead>
<tr>
<th>Steps</th>
<th>Determinants</th>
<th>Path options</th>
</tr>
</thead>
</table>
| 6a    | Initiate continuous communication as part of change management | - People-centricity  
- Initiating stakeholders | - Low to no communication  
- Medium frequency of communication at BU level  
- Frequent communication driven by IT/central team |
| 6b    | Initiate training of existing talent for IDP operations | NA | NA |
| 6c    | Initiate governance mechanism | Risk appetite | - Minimal, ad hoc governance  
- Standard set of tracking for metrics  
- Comprehensive governance, including dashboards for measuring performance, speed, and accuracy |
| 6d    | Initiate reskilling for displaced employees | People-centricity | - No reskilling/upskilling – impacted FTEs may be downsized or reassigned  
- Upskilling only for high-performing employees, rest reassigned/downsized  
- Reskilling/upskilling of all employees (all retained) |
| 7     | Develop pilot for the prioritized process | NA | NA |
| 8     | Obtain required data sets to train the tool | Availability of data | - Minimal training at production, with model learning during operations  
- Highly trained model starting with high level of accuracy at production |
| 9     | Cut to production with human supervision until IDP achieves the desired efficiency | - Availability of data  
- Risk appetite | - Always employ a human in the loop  
- Employ a human in the loop only for verification of highly sensitive processes  
- Allow STP where possible, with only exceptions requiring human intervention |
| 10    | Continuously monitor and report on metrics/KPIs | NA | NA |
| 11    | Repeat journey with the next process in the priority list | NA | NA |
## Variance in execution path steps for organizations by environmental determinants

### Scaling up

<table>
<thead>
<tr>
<th>Steps</th>
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<th>Path options</th>
</tr>
</thead>
</table>
| 12    | Embed necessary skills in the automation CoE | - Organization structure  
- Initiating stakeholders  
  ● Centralized talent pool for IDP managed by automation CoE  
  ● Decentralized talent pool for IDP with high degree of collaboration with automation CoE  
  ● Siloed talent pool for IDP collaborating with automation CoE on ad hoc basis |
| 13a   | Scale up and run operations  | NA                                                                            |
| 13b   | Continuously monitor and report on metrics/KPIs | NA                                                                            |
| 14a   | Set up a team to evaluate opportunities | Organization structure  
  ● Centrally nominated and controlled  
  ● Centrally controlled with nominations from business units  
  ● Truly cross-functional, nominally centralized |
| 14b   | Templatize opportunity evaluation and processing | NA                                                                            |
### Variance in execution path steps for organizations by environmental determinants

#### Steady-state

<table>
<thead>
<tr>
<th>Steps</th>
<th>Determinants</th>
<th>Path options</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Enable various exposure mechanisms to create awareness – newsletters, online web portals, etc.</td>
<td>NA</td>
</tr>
<tr>
<td>16</td>
<td>Institutionalize the governance model</td>
<td>NA</td>
</tr>
<tr>
<td>17</td>
<td>Continuously monitor and report on metrics/KPIs</td>
<td>NA</td>
</tr>
</tbody>
</table>
# Glossary of key terms used in this report (page 1 of 2)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial intelligence</td>
<td>Artificial intelligence is referred as the ability of the system to use its cognitive intelligence to learn how to interpret unstructured content, use relationships and patterns to build a fuzzy structure around it, and then leverage this structure to respond in a similar form as the input itself.</td>
</tr>
<tr>
<td>BPM tools</td>
<td>Business Process Management tools are process optimization solutions with process design, execution (through workflows and orchestration of different BPS technology systems), and monitoring (through analytics) capabilities.</td>
</tr>
<tr>
<td>BPO</td>
<td>Business Process Outsourcing refers to the purchase of one or more processes or functions from a company in the business of providing such services at large or as a third-party provider.</td>
</tr>
<tr>
<td>Buyer</td>
<td>The company/entity that purchases outsourcing services from a provider of such services.</td>
</tr>
<tr>
<td>Cognitive automation</td>
<td>Cognitive automation refers to the ability of a system to learn how to interpret unstructured content, such as natural language, and use analytical capability to derive and present inferences in a pre-defined/structured fashion – for example, a system that classifies a person’s mood into a pre-defined bucket based on his/her tone and language.</td>
</tr>
<tr>
<td>Computer vision</td>
<td>A type of AI technology that aims to achieve automatic visual understanding through an image or a sequence of images.</td>
</tr>
<tr>
<td>Deep learning</td>
<td>A subfield of machine learning concerned with algorithms and inspired by the structure and function of the brain called artificial neural networks.</td>
</tr>
<tr>
<td>FTE-based pricing</td>
<td>Input-based pricing structure; priced per resource type with significant price differences between onshore and offshore (such as per onshore clerk and per offshore clerk).</td>
</tr>
<tr>
<td>FTEs</td>
<td>Full-time equivalent is a unit that indicates the workload of an employed person.</td>
</tr>
<tr>
<td>GIC</td>
<td>Global In-house Center is a shared service or delivery center owned and run by a parent organization.</td>
</tr>
<tr>
<td>Horizontal business processes</td>
<td>Horizontal business processes refer to those processes that are common across the various departments in an organization and are often not directly related to the key revenue-earning business. Examples include procurement, finance &amp; accounting, and human resource management.</td>
</tr>
<tr>
<td>Machine learning</td>
<td>A type of artificial intelligence that provides computers with learning capabilities without explicit programming.</td>
</tr>
<tr>
<td>NLP</td>
<td>Natural Language Processing is a cognitive intelligence-based methodology to interpret human languages.</td>
</tr>
<tr>
<td>OCR</td>
<td>A technology that involves the recognition of printed characters and converting images into machine-encoded text.</td>
</tr>
</tbody>
</table>
### Glossary of key terms used in this report (page 2 of 2)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Offshoring</td>
<td>Transferring activities or ownership of a complete business process to a different country from the country (or countries) where the company receiving the services is located. This transfer is done primarily for the purpose of gaining access to a lower-cost labor market, but may also be done to gain access to additional skilled labor, to establish a business presence in a foreign country, etc. Companies may utilize offshoring either through an outsourcing arrangement with a third party or by establishing their own Global In-house Centers (GICs) in offshore locations, among other business structures.</td>
</tr>
<tr>
<td>POC</td>
<td>Proof of Concept is a realization of a certain method or idea in order to demonstrate its feasibility or a demonstration in principle with the aim of verifying that some concept or theory has practical potential.</td>
</tr>
<tr>
<td>RDA</td>
<td>RDA of attended RPAs that are deployed on user desktops; these are triggered by users instead of being orchestrated from a central control tower.</td>
</tr>
<tr>
<td>Semi-structured data</td>
<td>Semi-structured data is content that does not conform to a pre-defined structure but nonetheless contains tags / other markers to separate semantic elements and enforce hierarchies. In short, it has a self-describing structure. The placeholders of the content can be in varied sequences.</td>
</tr>
<tr>
<td>Semi-structured documents</td>
<td>It refer to the documents that contains useful information in some basic structure such as in the form of tables, titles to identify the content, etc. These may vary from document to document. Examples of semi-structured documents include invoices, purchase orders, bills of lading, etc.</td>
</tr>
<tr>
<td>Structured data</td>
<td>Structured data is content that conforms to the pre-defined structure of content in terms of tags to separate semantic elements and enforce hierarchies of records and fields. Moreover, the placeholders for the content have a pre-defined sequence.</td>
</tr>
<tr>
<td>Transaction-based pricing</td>
<td>An output-based pricing structure priced per unit transaction with significant price differences between onshore and offshore.</td>
</tr>
<tr>
<td>Unstructured data</td>
<td>Unstructured content refers to information that either does not have a pre-defined data model or is not organized in a pre-defined manner. Unstructured information is typically text-heavy, but may contain data such as dates, and numbers.</td>
</tr>
<tr>
<td>Unstructured documents</td>
<td>It refer to the documents that contains information in form of free flowing text and does not conform to any pre-defined structure. Examples of unstructured documents include contracts, legal documents, letters, articles, etc.</td>
</tr>
<tr>
<td>Vertical-specific business processes</td>
<td>Vertical-specific business processes refer to those processes that are specific to a department within an organization and are often directly related to the key revenue-earning business. Examples include lending process in the banking industry and claims processing in the insurance industry.</td>
</tr>
</tbody>
</table>
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