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Intelligent Document Processing (IDP) Playbook

August 2019

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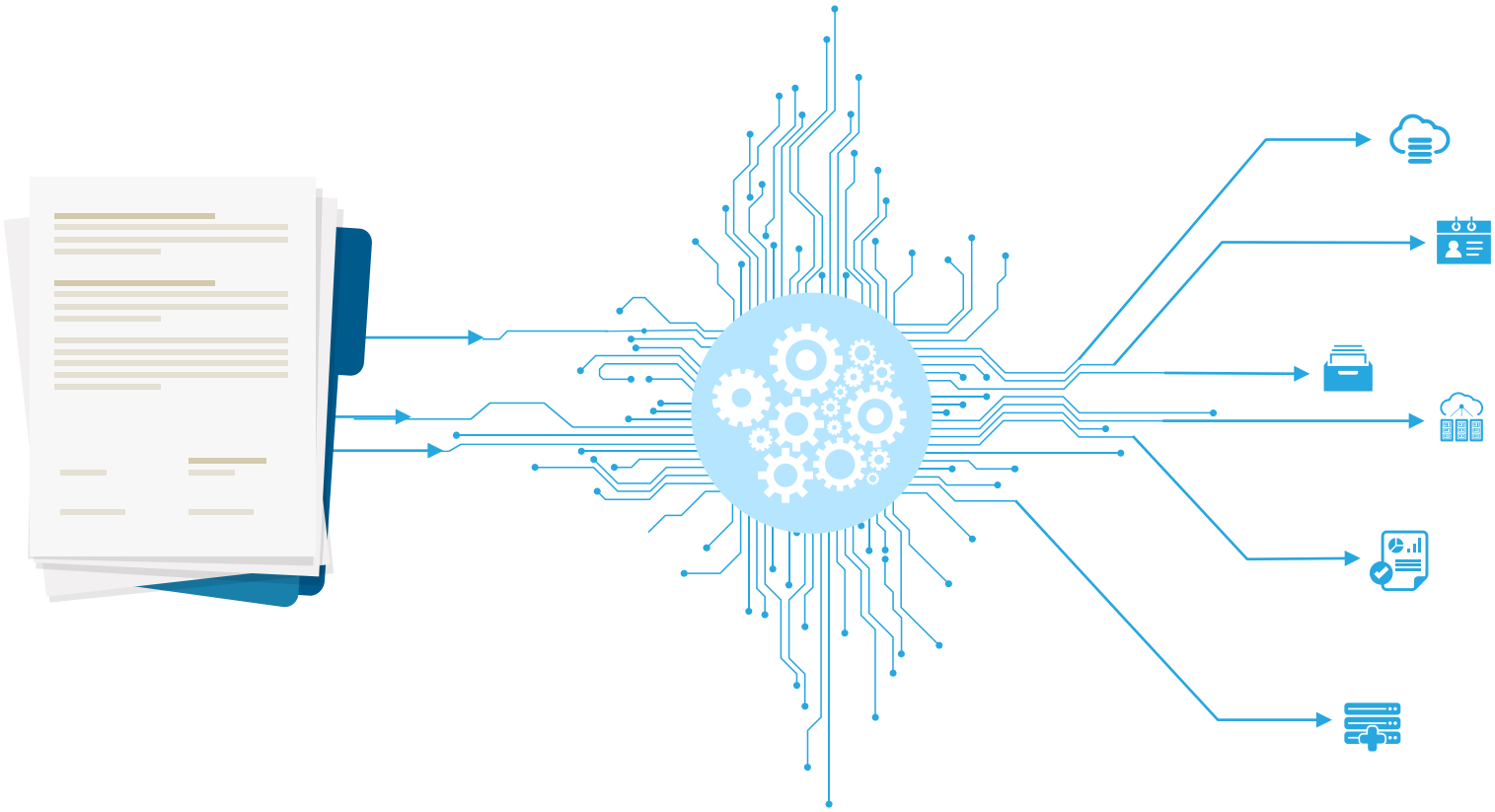
Objective

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.



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Key content

- **Introduction to automation**
- What is IDP and why is it important?
- IDP market characteristics
- The IDP journey
- Challenges and best practices
- Future outlook
- Appendix

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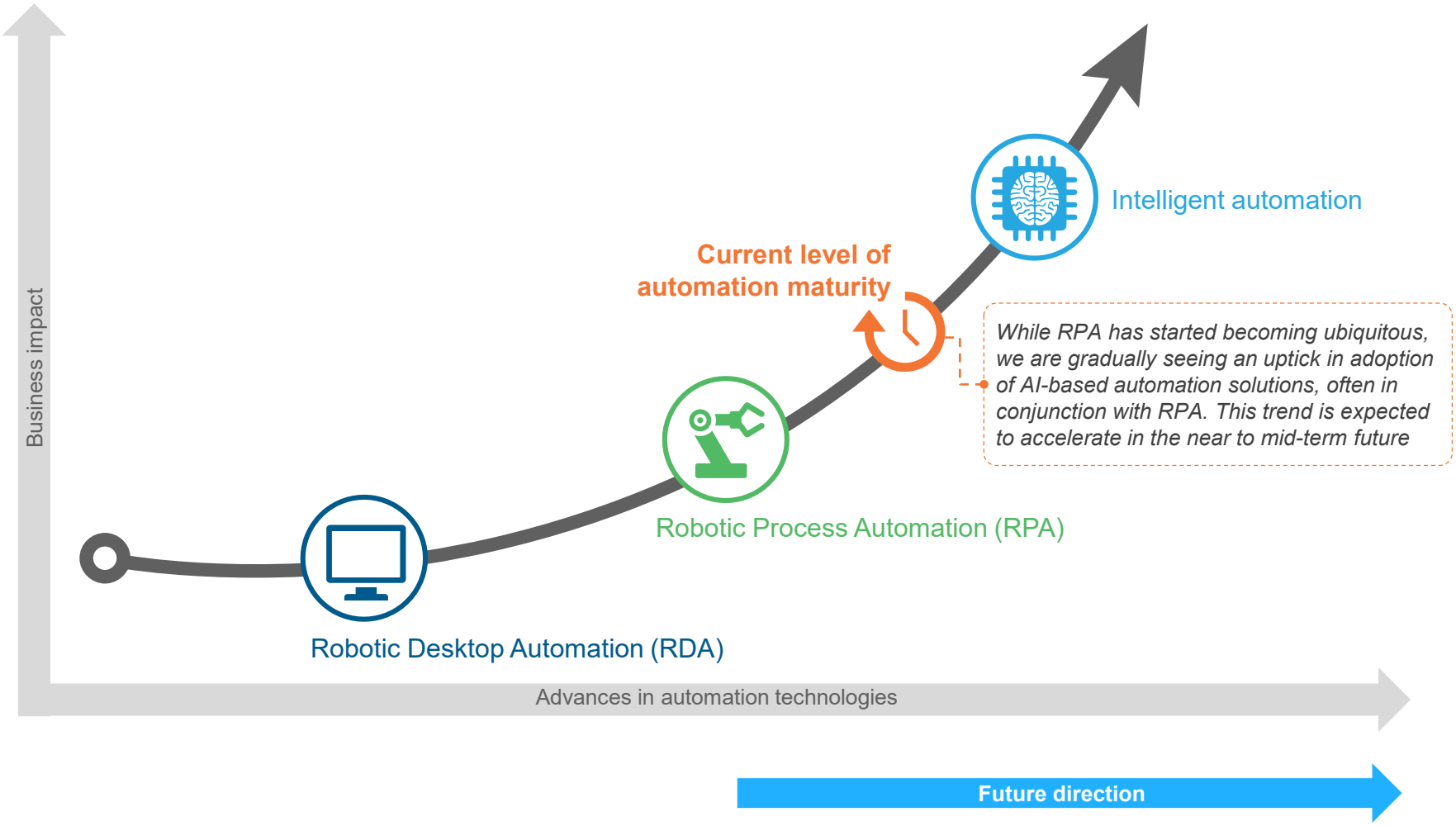
Evolution of automation

The automation ecosystem is evolving from basic automation for transactional tasks toward intelligent automation that can impact even judgment-intensive processes



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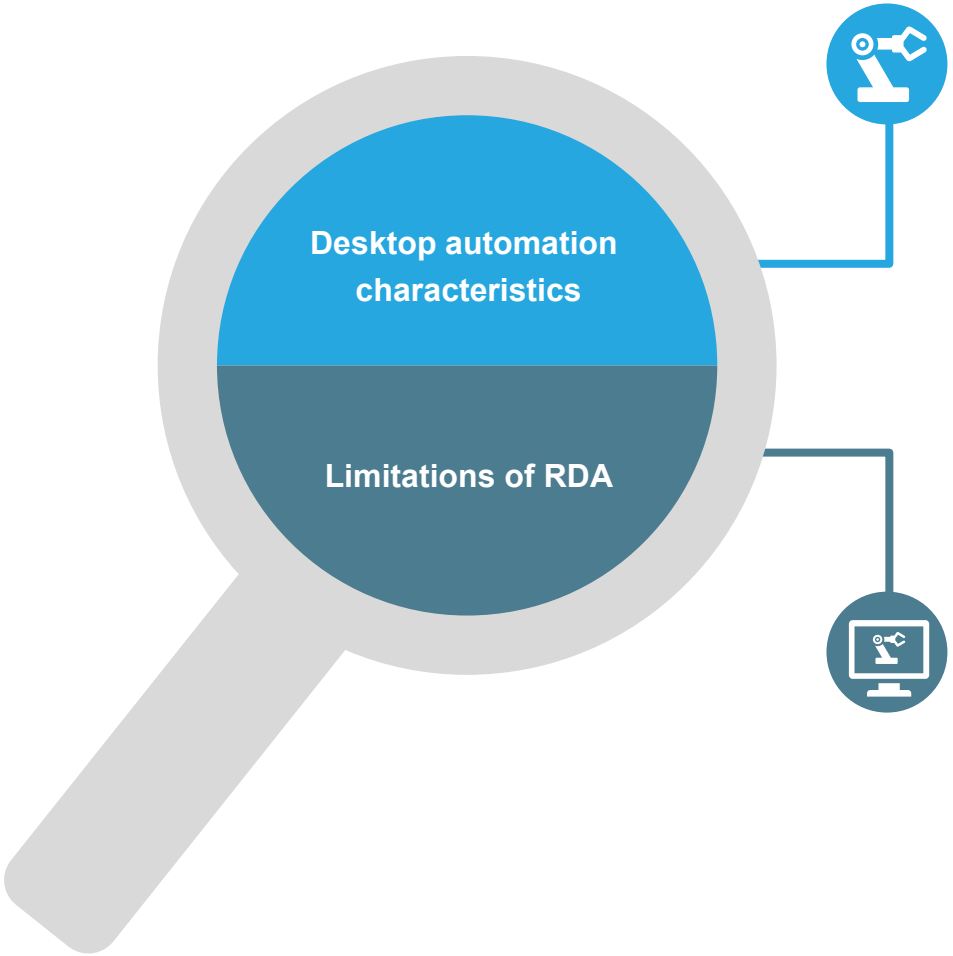
Robotic Desktop Automation (RDA)

RDA increases human productivity by automating simple rule-based tasks triggered by user events. However, the scope of automation is limited to user's desktop



- Deployed on user's desktop
- Robots are executed using user events/triggers
- Can process structured data and automate rule-based tasks
- Key differentiators include unified screen for desktop automation, interactive UI for on-screen step-by-step process guidance for users, and ability to analyze user actions to assess worker performance

- Does not perform end-to-end automation
- Cannot process semi-structured and unstructured data
- Cannot automate complex processes that require judgment
- Cannot converse/interact with customers
- Restricted to user's desktop and is not typically centrally managed

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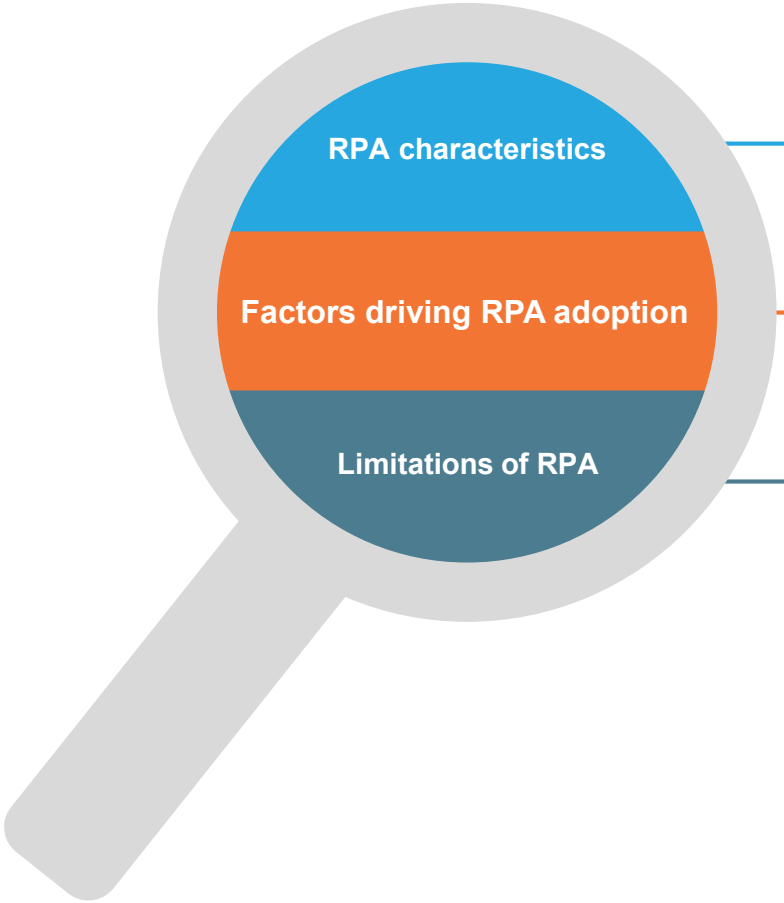
Robotic Process Automation (RPA)

RPA overcomes some of the limitations of RDA as it can operate at a higher speed without human triggers, and can be centrally managed on virtual machines



- Scalable virtual workers that mimic a user's activities
- Can be deployed on cloud/SaaS, on-premise, and in hybrid mode
- Follows a non-invasive approach
- Processes large volume at higher speed than RDA
- Highly deterministic; used mostly for transactional activities and standardized processes
- Differentiated capabilities include screen scraping, rules engine, robot performance analytics, library of pre-built automations, etc.

- Improves cost savings
- Increases employee productivity and improves employee experience
- Increases operational efficiency and quality
- Improves governance and compliance
- Lays the groundwork for a broader digital transformation agenda

- Cannot process semi-structured and unstructured data
- Rules-based and static in nature with no learning capabilities
- Cannot converse/interact with customers

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RPA use cases

While RPA is highly efficient for rule-based activities, it alone cannot enable end-to-end automation as it lacks the ability to handle judgment-oriented tasks

Use case	RPA capabilities	RPA limitations
Claims processing	For claim requests, once the data from claim forms is available in a structured format, RPA can process and make relevant data entries in the system	RPA cannot process claims if the data is in semi-structured/unstructured format
Invoice processing	RPA does rule-based matching of purchase orders & invoices	RPA can process only exact matches and cannot handle exceptions
Contact center	RPA can pull user-relevant details from any database, update new information, and perform pre-defined tasks	It cannot understand the intent & emotions of the user and cannot make suggestions to upsell & cross-sell leveraging user-specific inputs

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Intelligent automation

Intelligent automation overcomes the limitations of RPA and RDA by complementing them with AI-based technologies to enable end-to-end automation

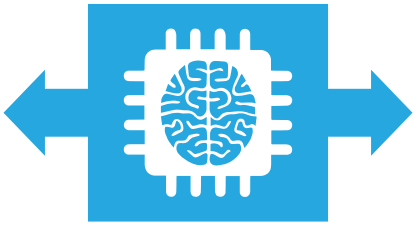
Intelligent automation refers to integration of rule-based automations with AI-based technologies to automate complex business processes.

Key characteristics of intelligent automation:

- Mimics human thought process through vision, language, and pattern detection
- Can process complex judgment-oriented tasks, which include structured, semi-structured, and unstructured data
- Can learn or improve its performance over time without being explicitly programmed
- Can provide probabilistic output in case of judgment-oriented processes

Differentiating capabilities

- Machine Learning (ML)
- Natural Language Processing (NLP)
- Advanced analytics
- Data capture
- Automated training and self-learning
- Library of ML algorithms



Factors driving intelligent automation adoption

- Reduces significant amount of time and resources spent in processing semi-structured and unstructured data
- Improves customer and employee experience, enables disruption of the industry (such as time-to-market and new business models), supports top-line growth, and helps transform processes
- Improves overall process accuracy, quality, speed, and digital and non-digital workforce productivity

Mature, productized AI-based solutions in today's market

Intelligent Document Processing (IDP)

Intelligent Virtual Agents (IVA)

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Intelligent automation use cases

AI-based components of intelligent automation such as IDP and IVA address limitations of RPA

Use case	RPA limitations	Intelligent automation capabilities
Claims processing	RPA cannot process semi-structured and unstructured data	IDP solutions can process semi-structured & unstructured data and convert it to structured format to be further processed by RPA
Invoice processing	RPA can process only exact matches and cannot handle exceptions	• IDP solutions can be used to extract invoice & purchase order details • ML and Deep Learning (DL) capabilities can be leveraged to handle exceptions
Contact center	It cannot understand the intent & emotions of the user and cannot make suggestions to upsell & cross-sell leveraging user-specific inputs	IVA uses AI technologies to understand/predict customer behavior and provide personalized recommendations

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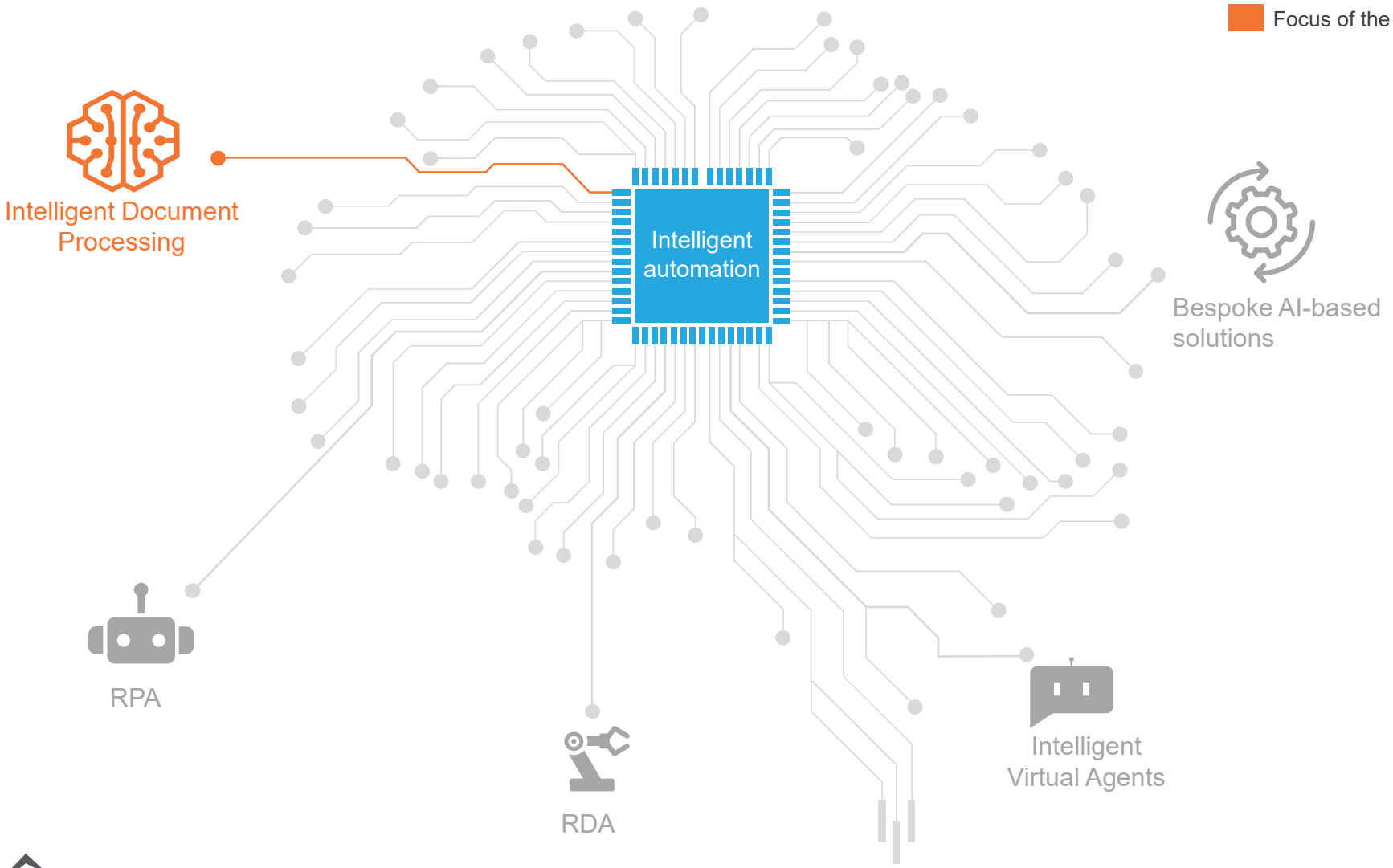
Key components of intelligent automation

AI-based solutions such as IDP and IVA process semi-structured and unstructured data to complement RPA and RDA



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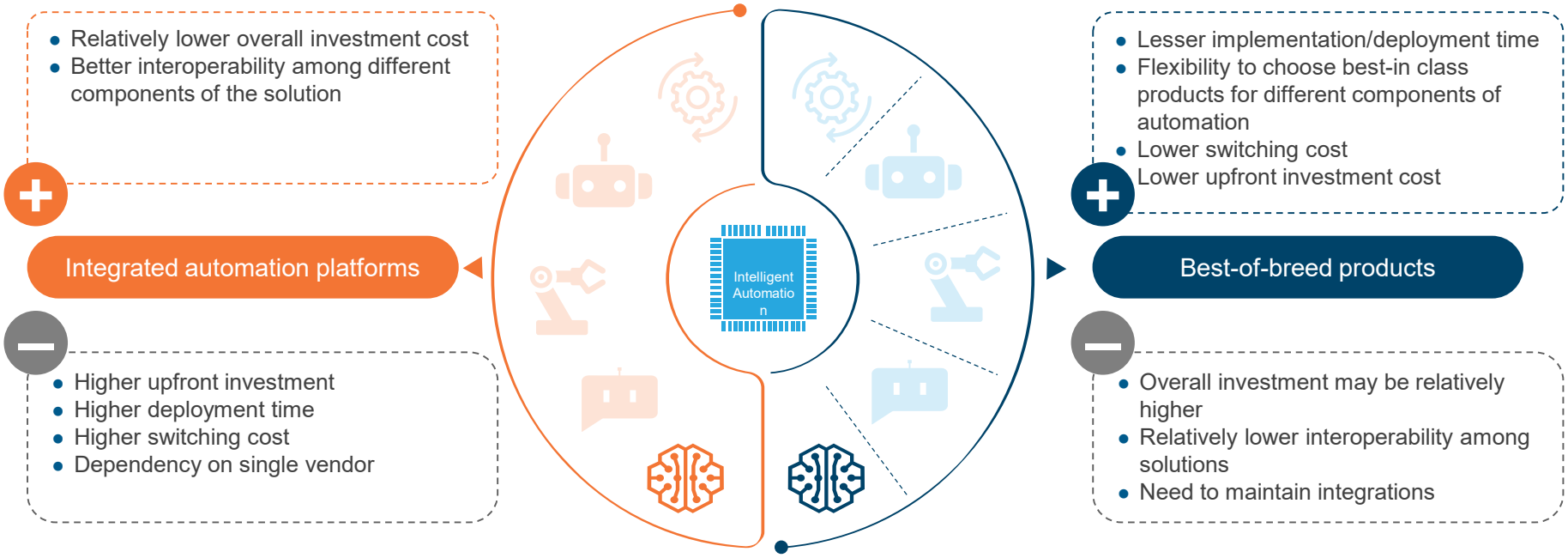
Enterprises can follow different approaches to adopt intelligent automation solutions



Intelligent Document Processing (IDP) solutions play a key role in the intelligent automation ecosystem. This report focuses on understanding IDP solutions, market trends, and providing guidance for a successful IDP journey.

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Key content

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- **What is IDP and why is it important?**
- IDP market characteristics
- The IDP journey
- Challenges and best practices
- Future outlook
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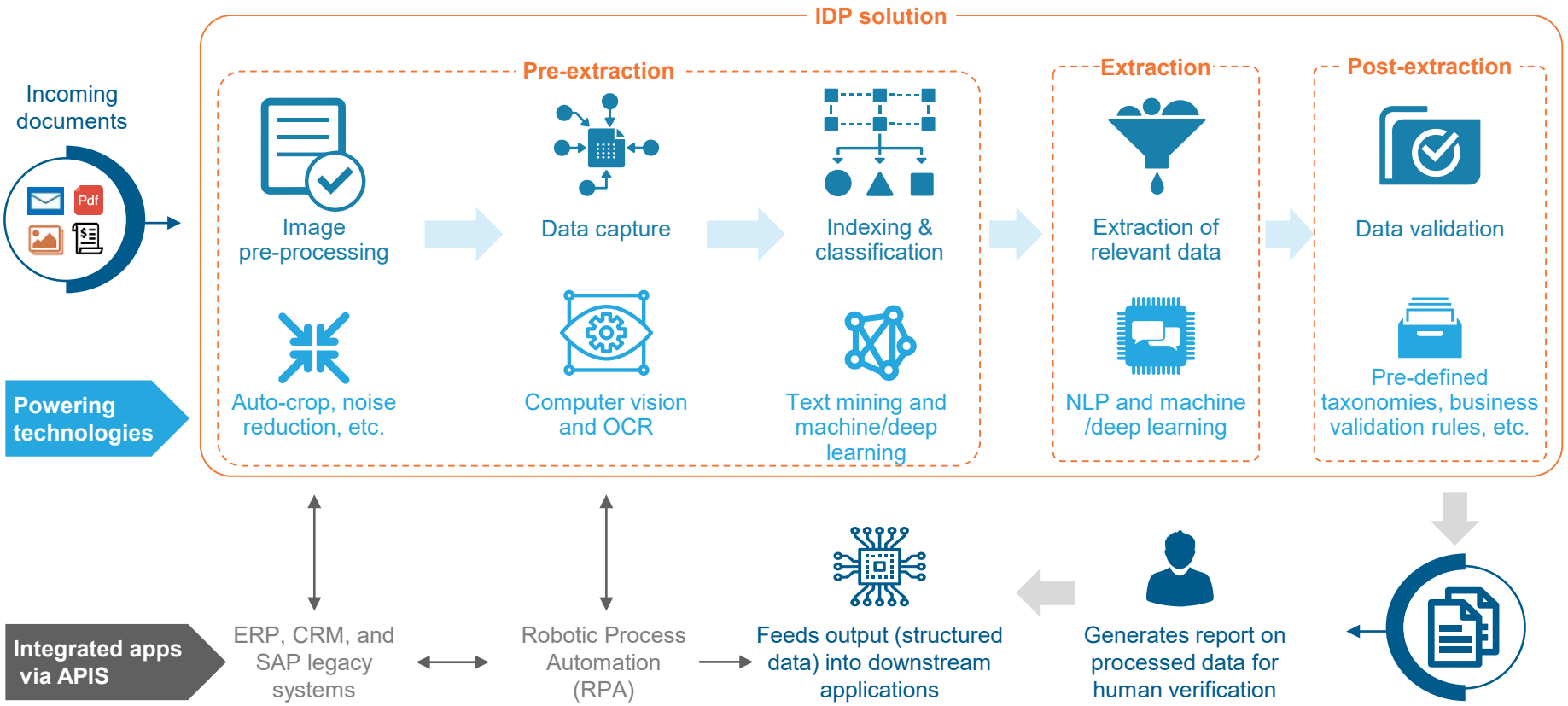
Understanding enterprise grade IDP solutions

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-extraction:** Performs image pre-processing to increase the quality of the scanned document, captures data, and indexes & classifies the documents into categories
- **Extraction:** Extracts relevant data leveraging NLP and ML/DL capabilities for further processing
- **Post extraction:** Validates the extracted data with the help of pre-defined taxonomies, data dictionary, and business validation rules



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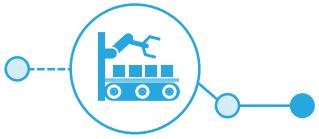
OCR vs. IDP

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

	OCR/template-based solution	IDP solution
	OCR converts images of documents into machine-encoded text and extracts specific fields based on templates	It may use OCR to convert images of documents to digital format, but extracts specific information using machine learning and/or deep learning
	It uses rule-based or template-based extraction. User needs to train the system for each template type	The extraction does not depend on the template but content. User needs to do minimal (if any) training for minor template changes
	Every converted document needs to be manually reviewed, unless the input documents are standard (in quality, positional elements, etc.)	Once the system is trained, Straight Through Processing (STP) can be enabled. The percentage of STP achieved can vary
	Cannot process unstructured documents such as contracts and emails	With the help of Natural Language (NL) capabilities, the system can process complex unstructured documents and can also create summaries

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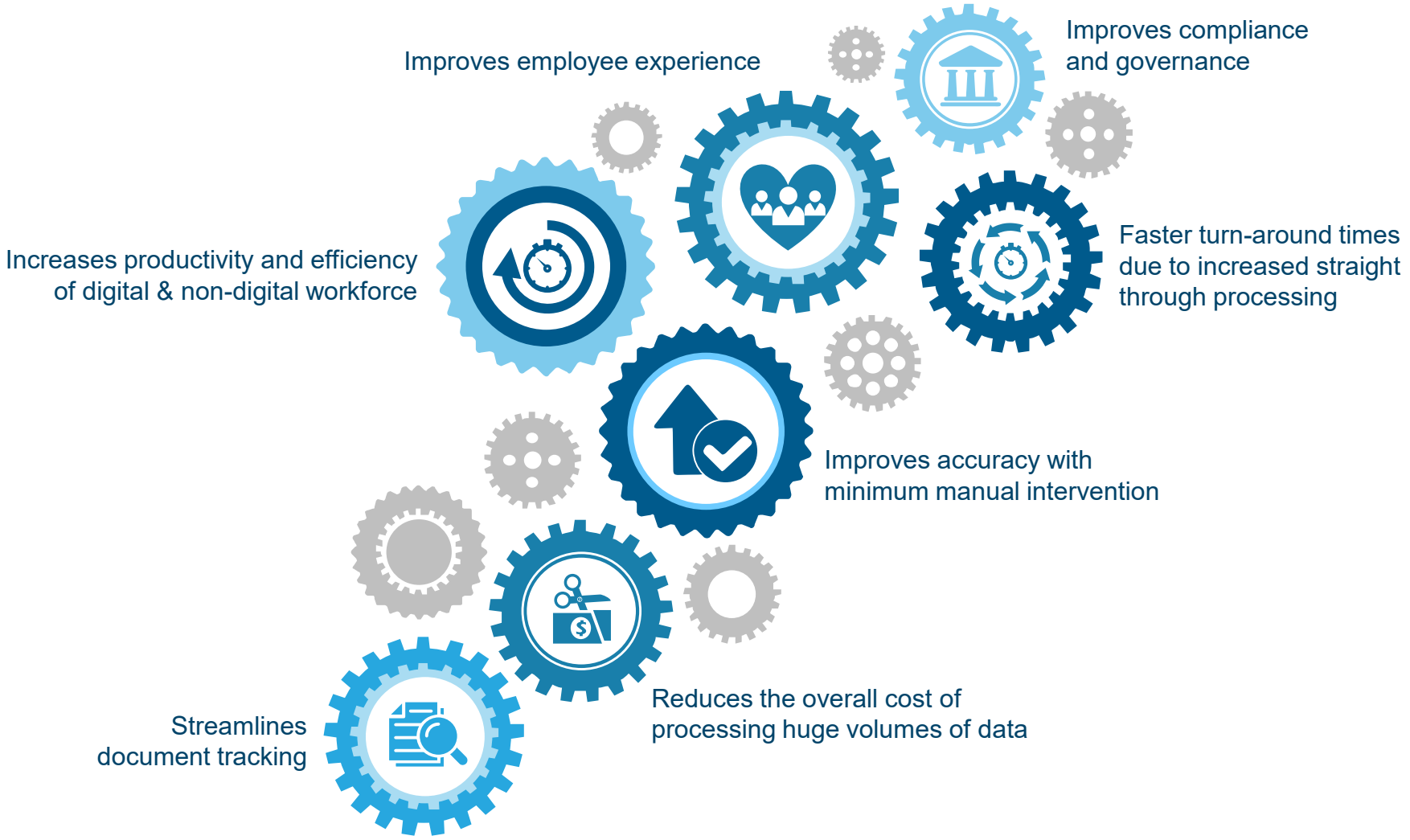
Key benefits of IDP software solutions



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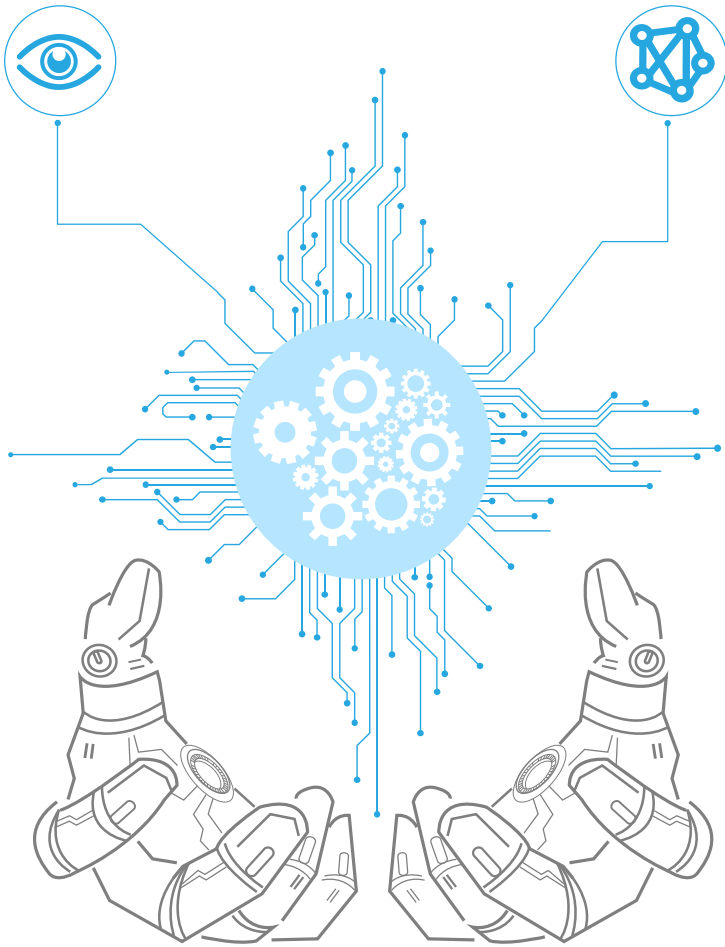
OCR, Computer Vision, ML & DL models, and NLP are the key core technologies powering IDP capabilities

Computer vision
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

OCR
Converts images of documents into machine-encoded text. OCR is trained using ML and deep learning algorithms to increase its accuracy



Machine learning & deep learning models
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

NLP
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 in classifying documents into different categories

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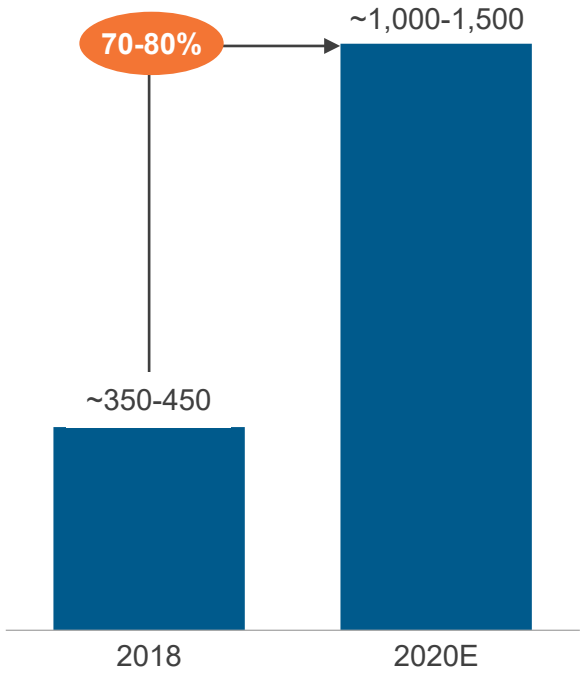
The adoption of IDP solutions among enterprises is increasing rapidly as evidenced by the rapid growth of the IDP market

IDP independent technology vendor market size[1]
Revenue in US$ million

XX CAGR



Key growth drivers of IDP adoption

- 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 among enterprises to enable end-to-end process automation with integrated RPA and IDP capabilities
- Improved sophistication of AI technologies powering IDP solutions, which significantly increases their accuracy rates in processing documents compared to traditional OCR solutions
- While the IDP adoption among enterprises is still in a nascent stage, early success stories by forward-looking enterprises will likely increase acceptance and accelerate adoption of IDP solutions among other enterprise buyers in the near future

1 Based on revenue estimates of 16 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 (2019)

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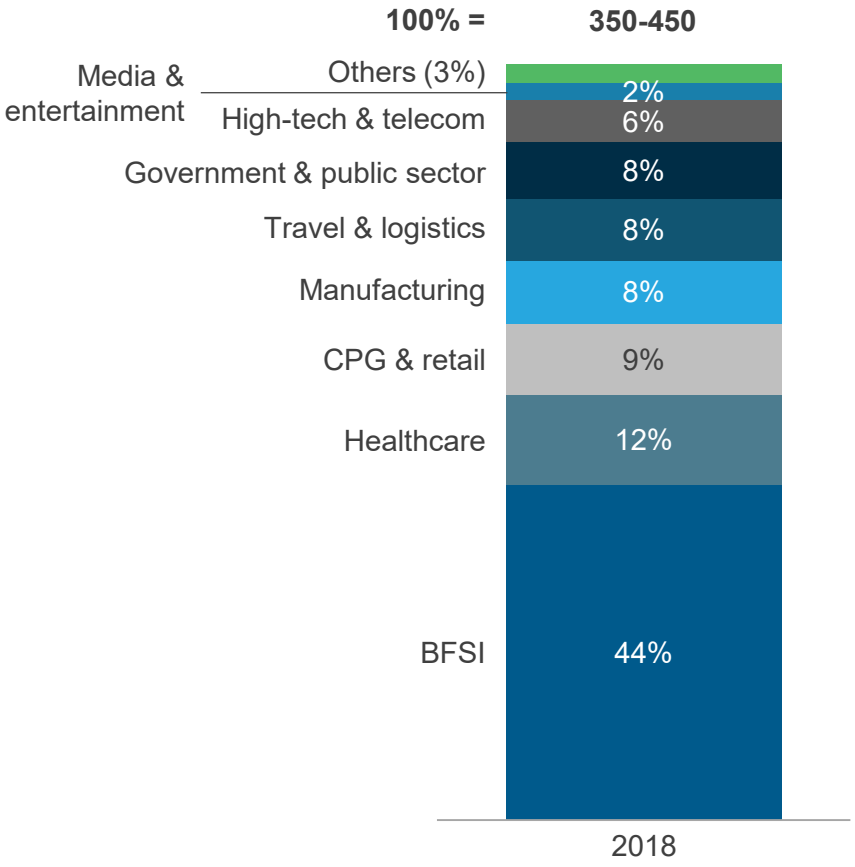
While BFSI and healthcare enterprises are the early adopters of IDP solutions with over 50% share, adoption among other enterprises is expected to increase

IDP adoption by buyer industry
License revenue in percentage; US$ million



- The BFSI industry is the largest adopter of IDP solutions, driven mainly by the need to process huge volumes of semi-structured and unstructured documents such as KYC documents and invoices
- IDP solutions offer a compelling value proposition for BFSI enterprises that face multiple challenges in increasing process efficiency and accuracy to improve their strategic outcomes and competitive advantage
- The adoption of IDP solutions is highly prevalent in the healthcare industry and they are deployed across multiple use cases such as patient onboarding, support of electronic medical records, and processing physician referrals
- CPG & retail, travel & logistics, manufacturing, and telecom are also deploying IDP solutions to process documents in proof of delivery, custom declarations, driver logs, maintenance logs, etc.

Note: Based on the capability assessment of 16 IDP technology vendors
Source: Everest Group (2019)

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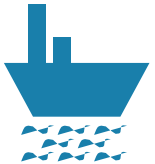
KYC, invoice processing, insurance claims, patient onboarding, patient records, proof of delivery, and order forms are the most common use cases of IDP solutions

				
BFSI	Healthcare	Telecom	Manufacturing	Travel & logistics
It is the largest adopter of IDP solutions, driven mainly by the need to process huge volumes of semi-structured and unstructured documents such as KYC documents, invoices, insurance claims, bank statements, and checks	The healthcare & pharma industry finds high applicability for IDP in processing documents related to R&D, patient onboarding, patient records, patient surveys, physician referrals, and processing claim-related documents	CPG & retail are witnessing increased adoption of IDP in areas such as proof of delivery, custom declarations, driver logs, and maintenance logs	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	IDP has been applied in automation of paper work involved in creating user documentation, invoice processing, proof of delivery, and purchase orders among others in the travel & logistics industry

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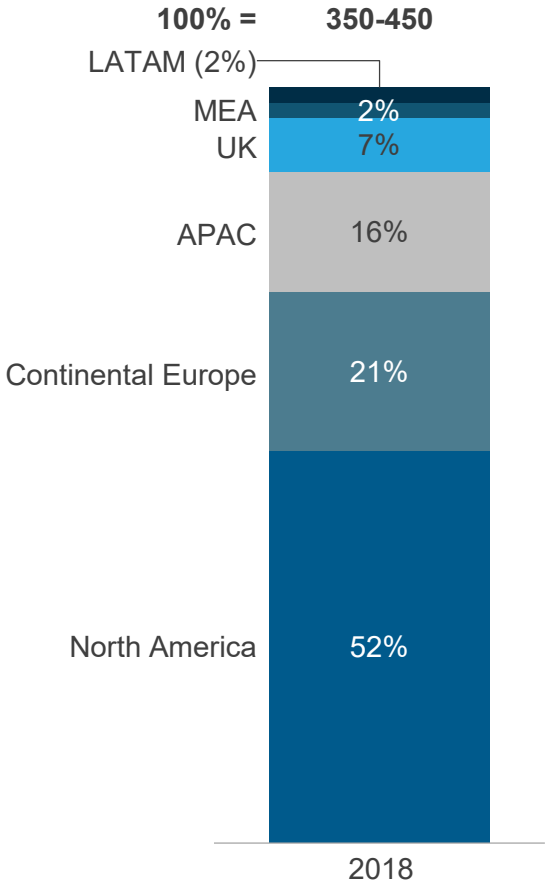
Enterprises in North America and Continental Europe dominate adoption of IDP solutions; mature enterprises within the BFSI sector contribute heavily

IDP adoption by buyer geography
License revenue in percentage; US$ million



- Enterprises in North America are the largest adopters of IDP software solutions. Within North America, the United States has witnessed high adoption, primarily driven by large global organizations in BFSI and healthcare sectors
- Continental Europe has also seen high adoption for IDP solutions. The availability of IDP software products with the ability to process documents in multiple European languages also aids adoption in Continental Europe
- APAC has also witnessed moderate adoption of IDP solutions due to relatively lower maturity of overall automation initiatives. Additionally, lack of sophisticated language capabilities hinders full-fledged adoption
- The continued success stories of IDP adoption among enterprises in mature geographies such as North America and evolving sophistication of IDP software products is expected to drive adoption in MEA and LATAM in the near future

Note: Based on the capability assessment of 16 IDP technology vendors
Source: Everest Group (2019)

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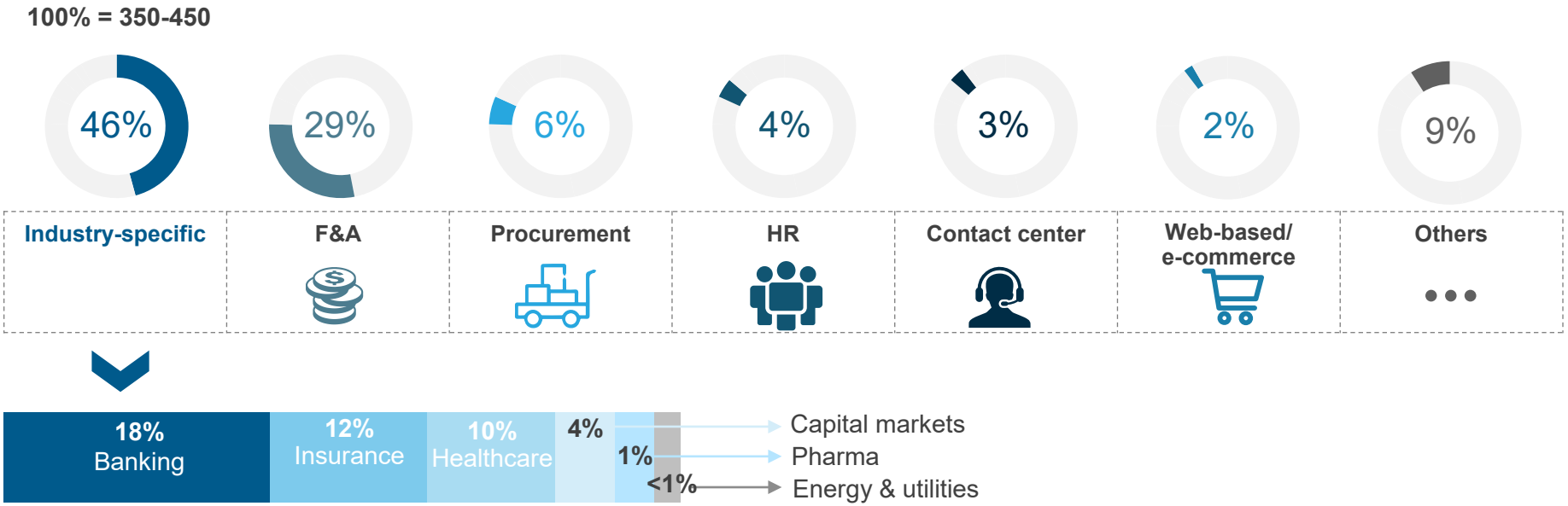
IDP solutions are largely deployed in industry-specific processes within BFSI & healthcare and in horizontal functions such as F&A

IDP adoption by business function
License revenue in percentage; US$ million



- Industry-specific processes such as customer onboarding, mortgage processing, trade finance, legal documents, claims, and patient registration have witnessed high adoption of IDP solutions
- Within F&A, accounts payable and accounts receivable are the most common use cases for IDP solutions, driven by high volume and error-prone nature of these processes
- Increased adoption is also being witnessed among procurement and HR functions owing to enhanced focus on reducing operational costs and increasing workforce productivity within these functions

Note: Based on the capability assessment of 16 IDP technology vendors
Source: Everest Group (2019)

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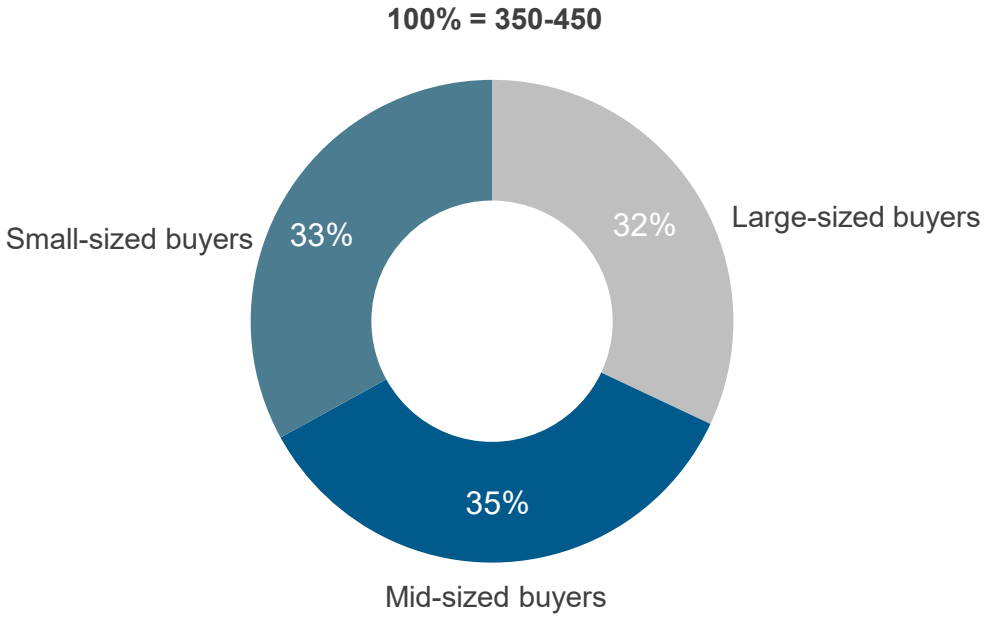
IDP solutions find applications across enterprises, regardless of size; volume of documents and time spent on processing are the key criteria for applicability

IDP adoption by buyer size[1]
License revenue in percentage; US$ million



- The adoption of IDP solutions is distributed almost equally among small-, mid-, and large-sized buyers. Relative volume of documents determines the applicability of IDP, as opposed to the overall revenue
- A significant chunk of adoption among large-sized buyers is driven by RPA partners and system integrators
- Point solutions, that are typically focused on a specific business function or industry, are increasingly being adopted by mid-sized and small-sized buyers

1 Buyer size is defined as large (>US$5 billion in revenue), mid-sized (US$1-5 billion in revenue), and small (<US$1 billion in revenue)
Note: Based on the capability assessment of 16 IDP technology vendors
Source: Everest Group (2019)

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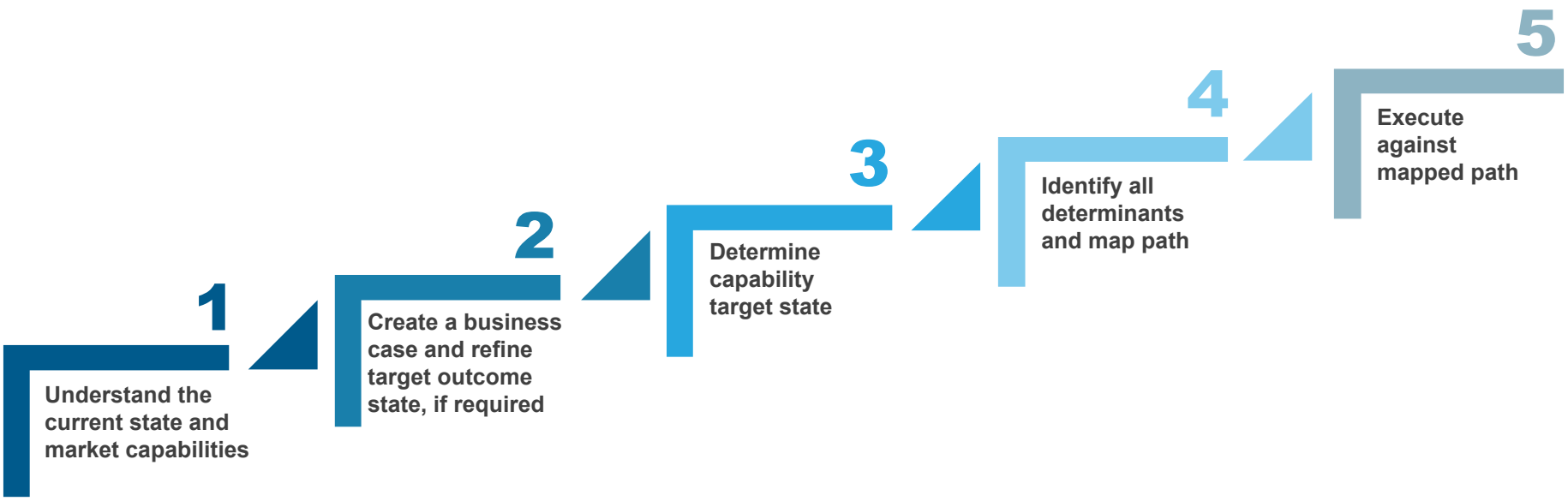
Enterprises can break down their IDP journey into five distinct steps



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

- 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

- 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

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

- Execute based on the planned path
- Course correct if and when new information comes to light
- Continuously monitor, seek to improve, and systematize

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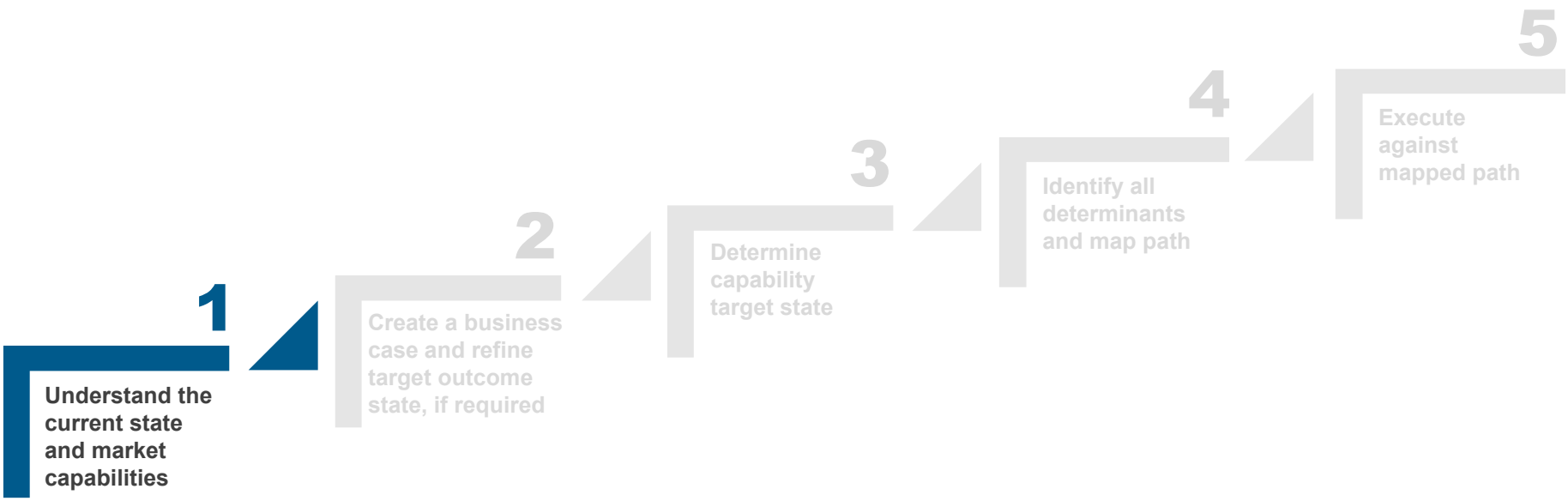
Enterprises can break down their IDP journey into five distinct steps



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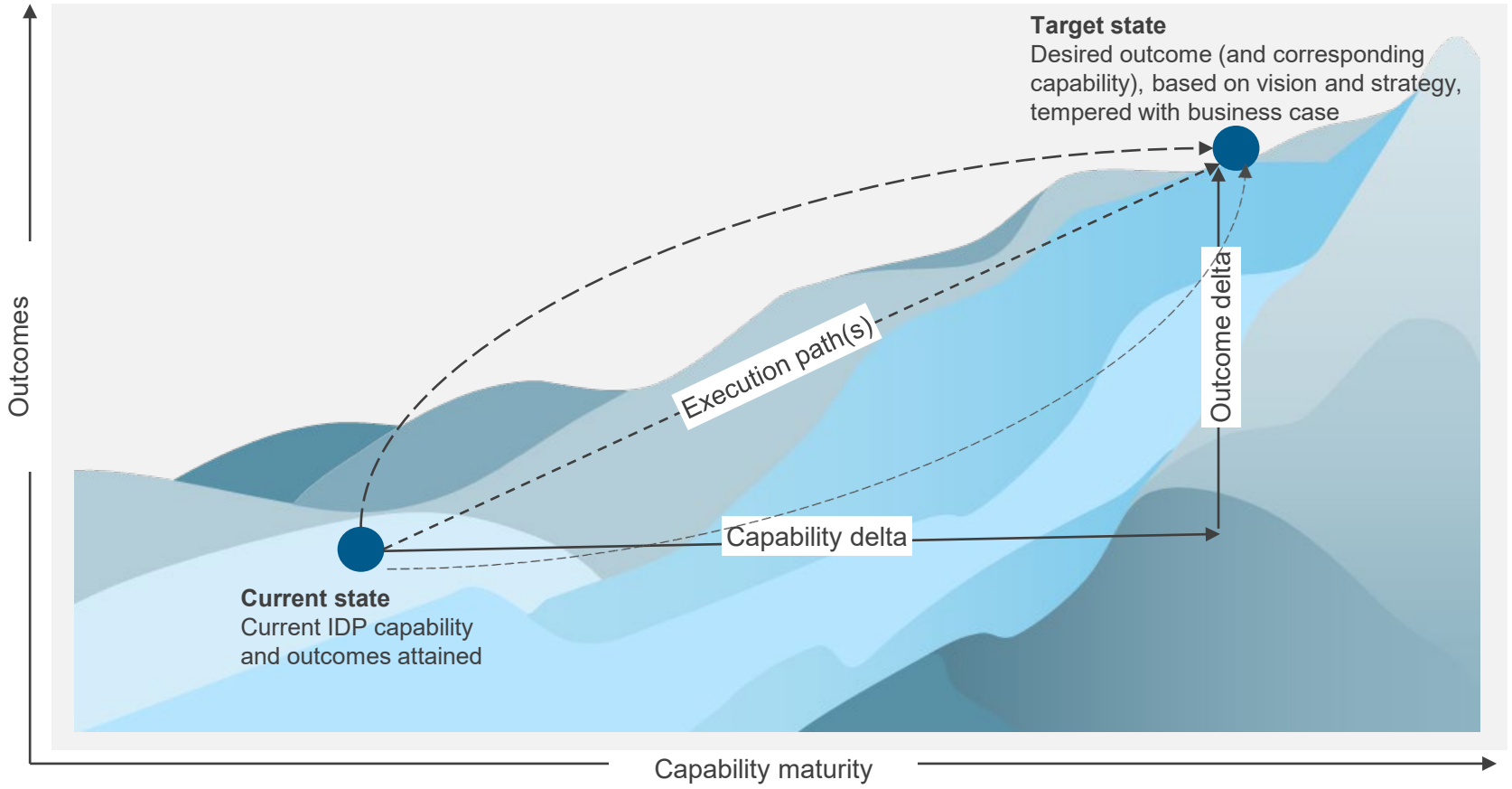
It is important for enterprises to understand their current and desired target outcome states to map a best-fit execution path for their IDP journey

1



- 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

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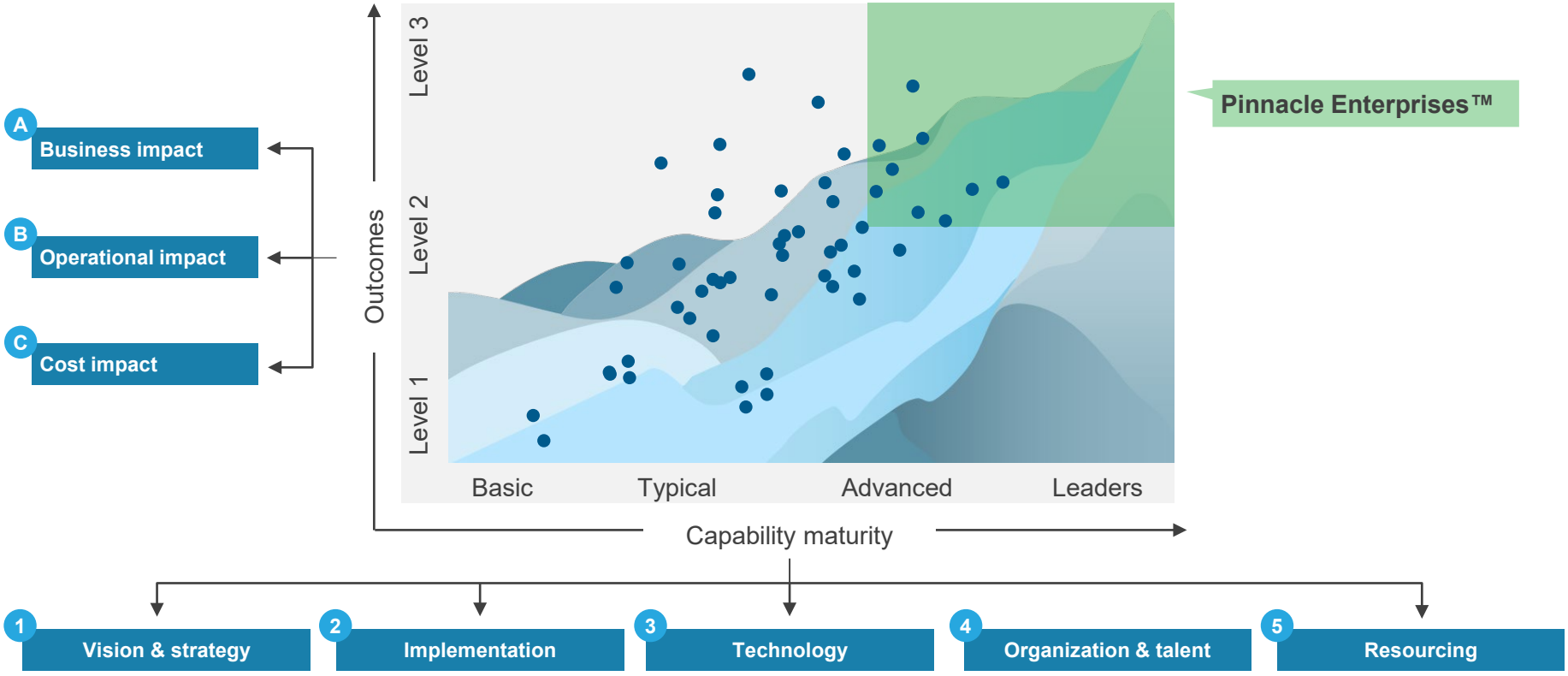
The Pinnacle Model™ provides a framework to help enterprises measure the IDP journey's current and target states, both in terms of outcomes and capabilities

1

Everest Group Pinnacle Model™ for mapping an enterprise's journey to become a Pinnacle Enterprise™



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

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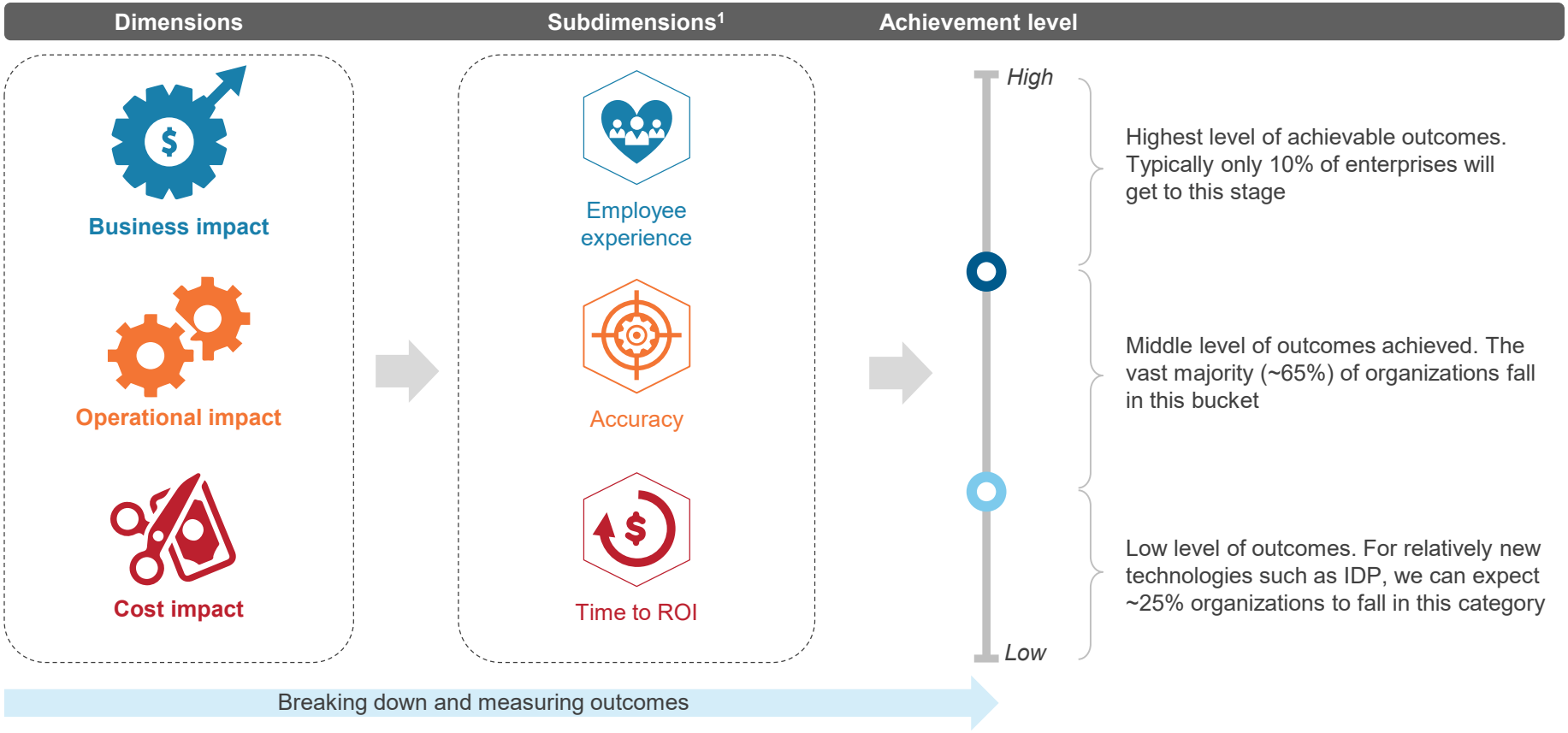
Outcomes: Use the Pinnacle Enterprise™ outcomes model to understand your current state and goals for the desired target state

1



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

1 Not exhaustive

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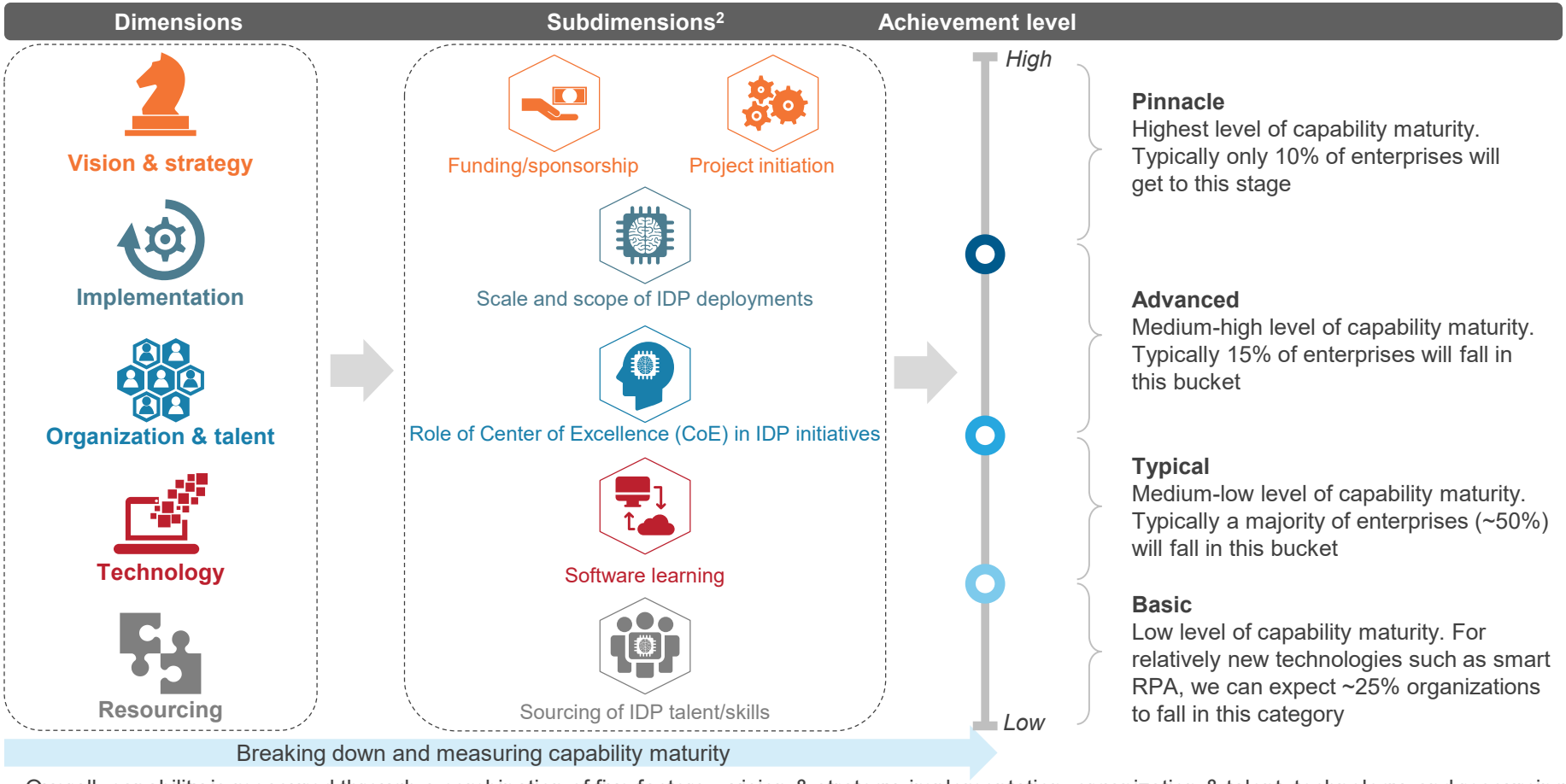
Capability: The Pinnacle Enterprises™ Capability Maturity Model (CMM)[1] can help enterprises understand their current state of capabilities and subsequently where they want to get to

1



- 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

1 Refer to pages 91-102 for the detailed model, dimensions, and subdimensions
2 Not exhaustive

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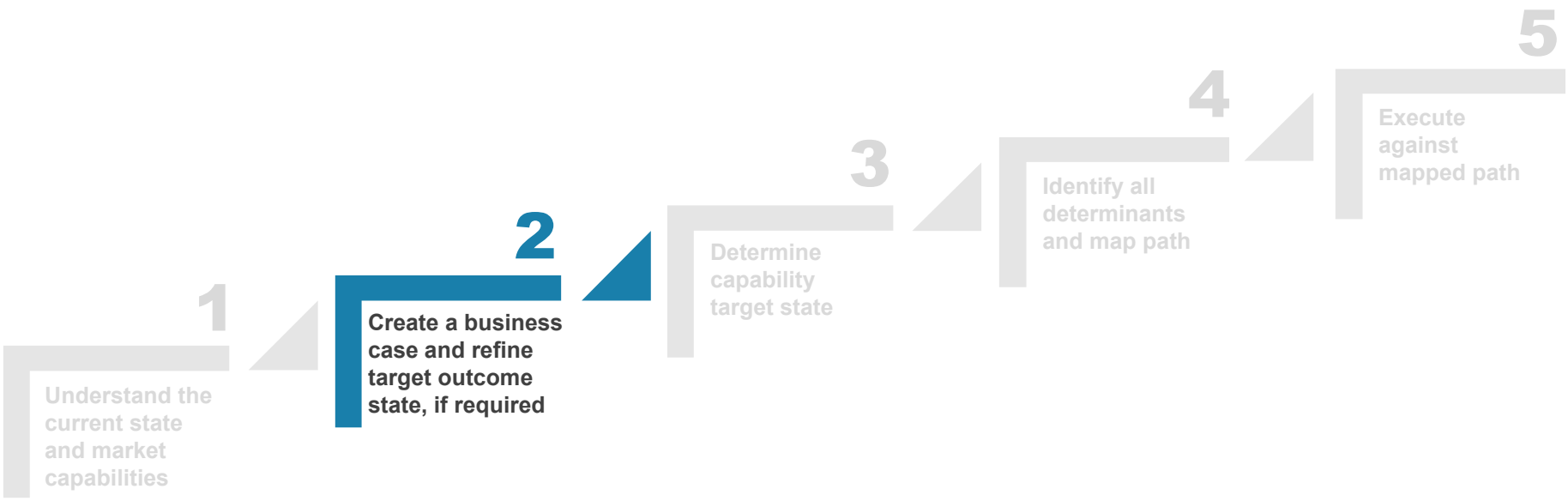
Enterprises can break down their IDP journey into five distinct steps



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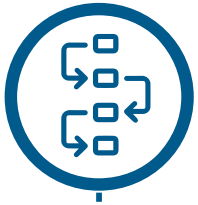
Create a business case and refine target outcome state

2

Identification of processes

- There are multiple areas across business functions where IDP can be implemented
- However, the applicability of IDP is limited to processes with data extraction
- The first step is to identify all the content-centric processes across business functions where IDP can be applied



Prioritization of processes

- Once the long list of processes is identified, these processes should be prioritized for IDP implementation
- In general, processes with higher potential and higher cost of operations are prioritized
- These processes should be prioritized using a structured, repeatable framework

Creating a business case

- Post identification of top priority processes, a business case should be developed to identify the target outcome state
- All potential use cases and target options should be examined to arrive at an achievable target outcome state

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.

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Create a business case and refine target outcome state

List of data extraction-based processes should be identified through a filtering approach

2

Identification of processes | Prioritization of processes | Creating a business case

ILLUSTRATIVE

Applicability of IDP

Filtering criteria

Processes which involve documents in semi-structured or unstructured format

- Data extraction 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

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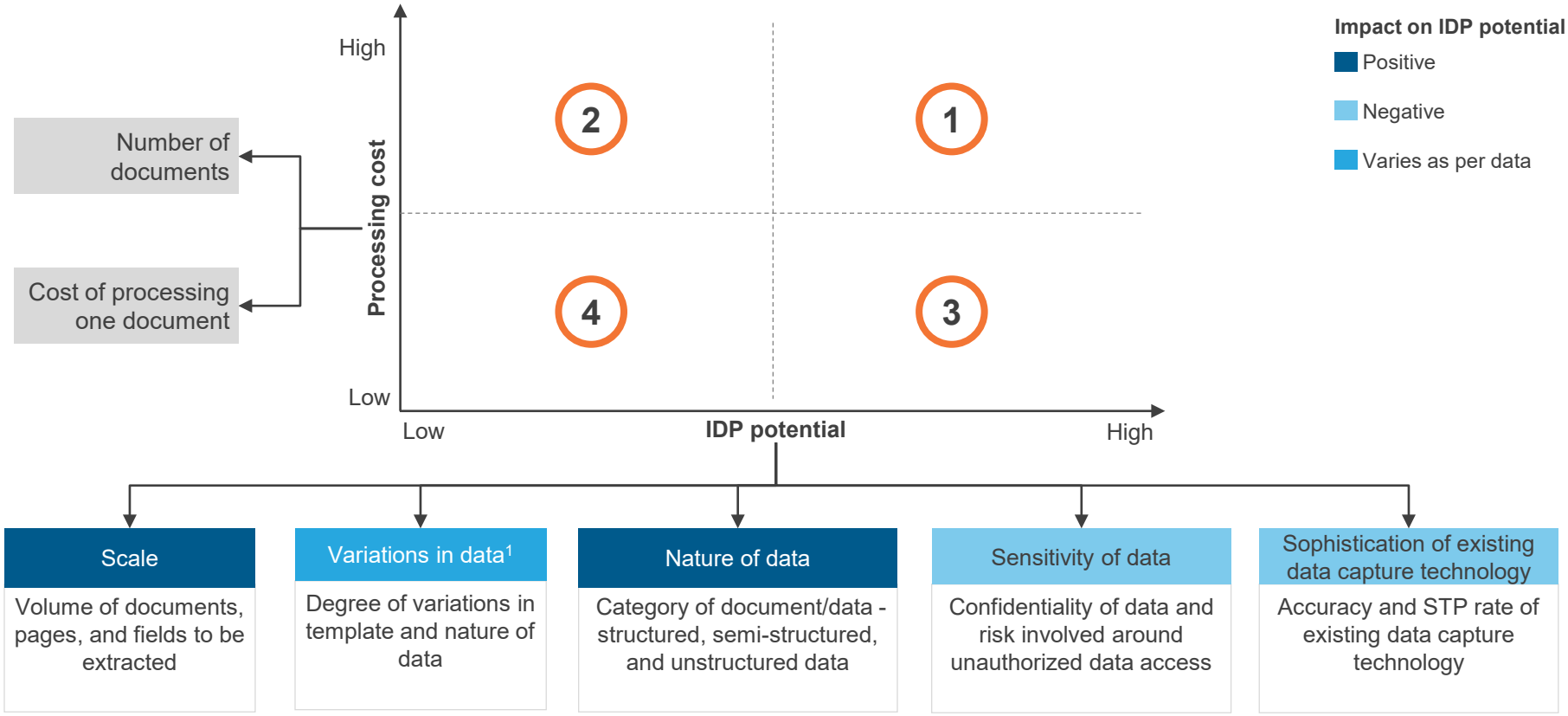
Create a business case and refine target outcome state

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

2

Identification of processes | **Prioritization of processes** | Creating a business case

ILLUSTRATIVE



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

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Create a business case and refine target outcome state

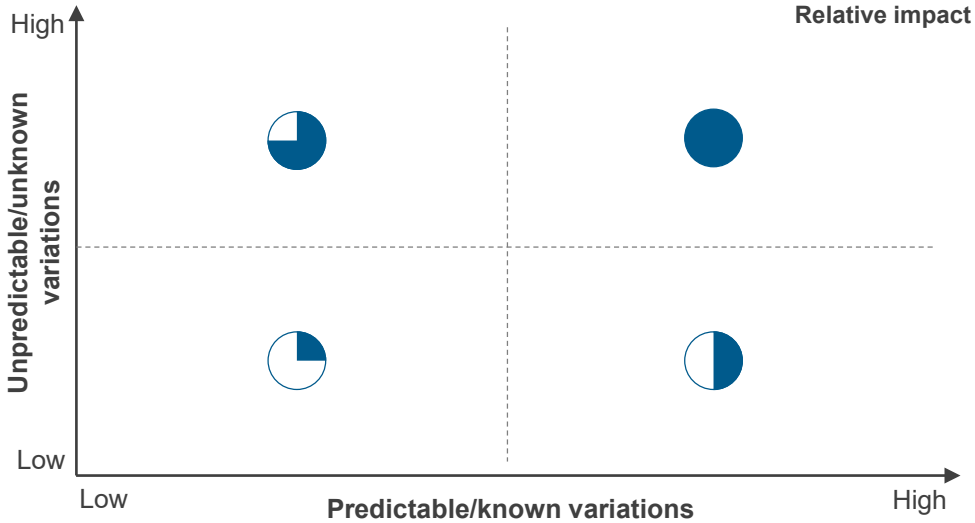
Variations in data can have both negative and positive impact on IDP potential depending on nature of variations

2

Identification of processes | **Prioritization of processes** | Creating a business case

Variations in data

Measure of new variations, typically over longer periods of time. High number of new variations has negative impact on the IDP potential



Measure of expected variations, typically observed within a defined timeframe. High expected variations can have positive impact on IDP potential as the system can be trained to handle these variations

Example 1	Example 2
Consider a process that involves 10 different known variations in the nature of data/documents, and unknown variations 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.	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.

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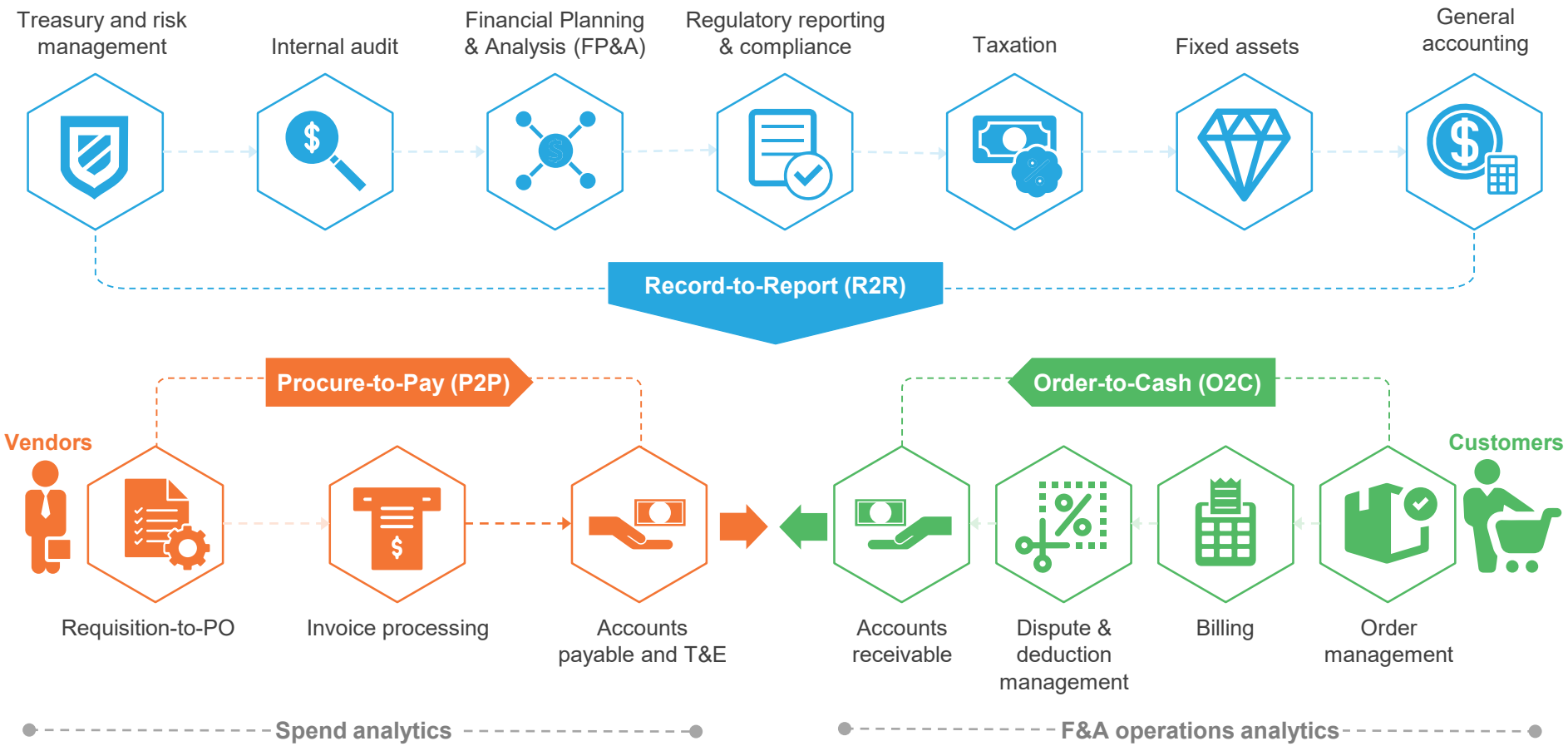
Illustration: Consider an organization evaluating its Finance & Accounting (F&A) business function for IDP implementation

2

Finance and Accounting (F&A) value chain



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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

2

Detailed description of processes within F&A

XXX: Processes to be considered for IDP implementation

F&A strategy

- F&A strategy including tax and risk position
- Accounting policy and control
- Shareholder relations
- M&As/divestitures
- External reporting

Internal audit

- Strategy
- Establish annual audit plan
- Conduct audits
- Reports and recommendations

Budgeting/ forecasting

- Strategy
- Budget analysis and approval process
- Build-line item budget
- Forecast roll-ups and consolidation
- Forecast analysis and approval process

Capital budgeting

- Strategy
- Administer approval process
- Project reporting

Treasury & risk management

- Strategy
- Bank relations and administration
- Cash management and forecasting
- Investments
- Debt management
- Foreign exchange
- Treasury risk management

Management reporting & analysis

- Strategy
- Regular reporting
- Data extraction
- Analysis
- Ad hoc analysis and special projects
- Cost accounting

Regulatory reporting & compliance

- Strategy
- Data extraction
- Management Discussion & Analysis (MD&A)
- Regulatory reporting
- Compliance program

Fixed assets

- Maintain master data
- Merger, acquisition, and consolidation of assets
- Post-depreciation

General accounting

- Strategy
- Process general entries
- Account reconciliations
- Inter-company accounting
- Prepare trial balances
- Perform closings
- Manage consolidations
- Cost accounting

Accounts receivable

- Strategy
- Customer setup
- Billing
- Cash applications
- Credit and collections
- Customer inquiries
- Reporting

Tax

- Strategy
- Tax accounting
- Tax planning and analysis
- Tax compliance
- Tax audit

Accounts payable and T&E

- Strategy
- Maintain master data
- Process payment requests
- Process T&E claims
- Administer EDI/P-card
- Month-end close
- Vendor inquiries
- Reporting

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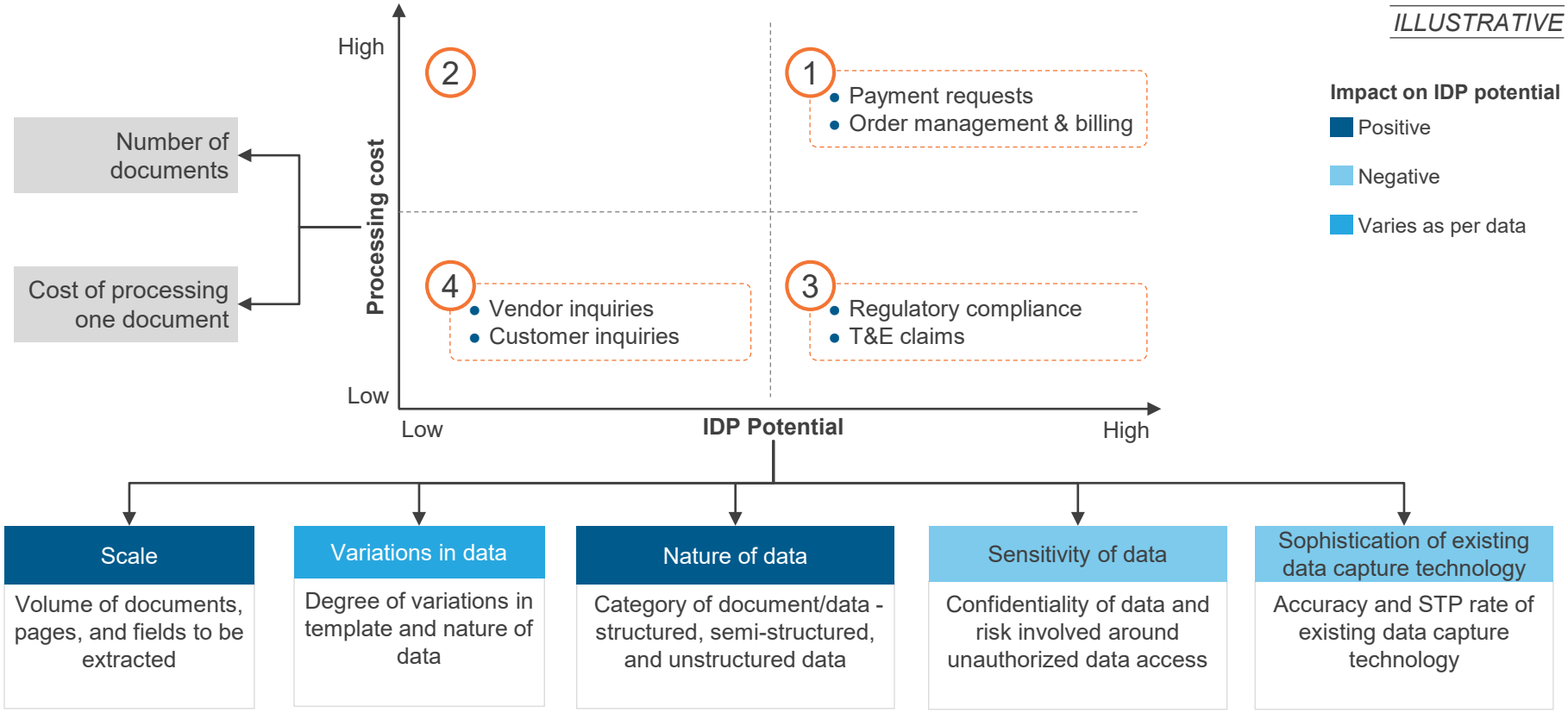
Once the processes are identified, ones with high processing cost and high IDP potential should be considered for further evaluation

2



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Factors to consider when creating a business case

2

Identification of processes | Prioritization of processes | **Creating a business case**

ILLUSTRATIVE

Field level accuracy/confidence

Probability of extracting accurate information at field level

- Consider a scenario that involves multiple fields
- Each field extracted may have a different confidence level associated with it
- Enterprises can set a threshold level for each field

Straight Through Processing (STP)

Percentage of viable documents that are processed touchless (without human intervention)

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).

- Typically, business cases are created around STP rates and accuracy level, which reflect the direct cost reduction and productivity improvements
- High document level accuracy enables STP. However, in some industries such as banking and financial services, compliance requirements and sensitivity of data always demands human-in-the-loop, even though STP can be achieved

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Create a business case and refine target outcome state

2

Identification of processes | Prioritization of processes | **Creating a business case**

STP rate
STP rates differ based on complexity/nature of document

State 1	State 2	State 3	
60%	70%	80%	Increasing level of outcomes

Sophistication of IDP solutions

Training cost

State 1	State 2	State 3	
↑	↑↑	↑↑↑	Increasing level of cost

Static cost (includes license cost, implementation cost, and maintenance cost)

- *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*

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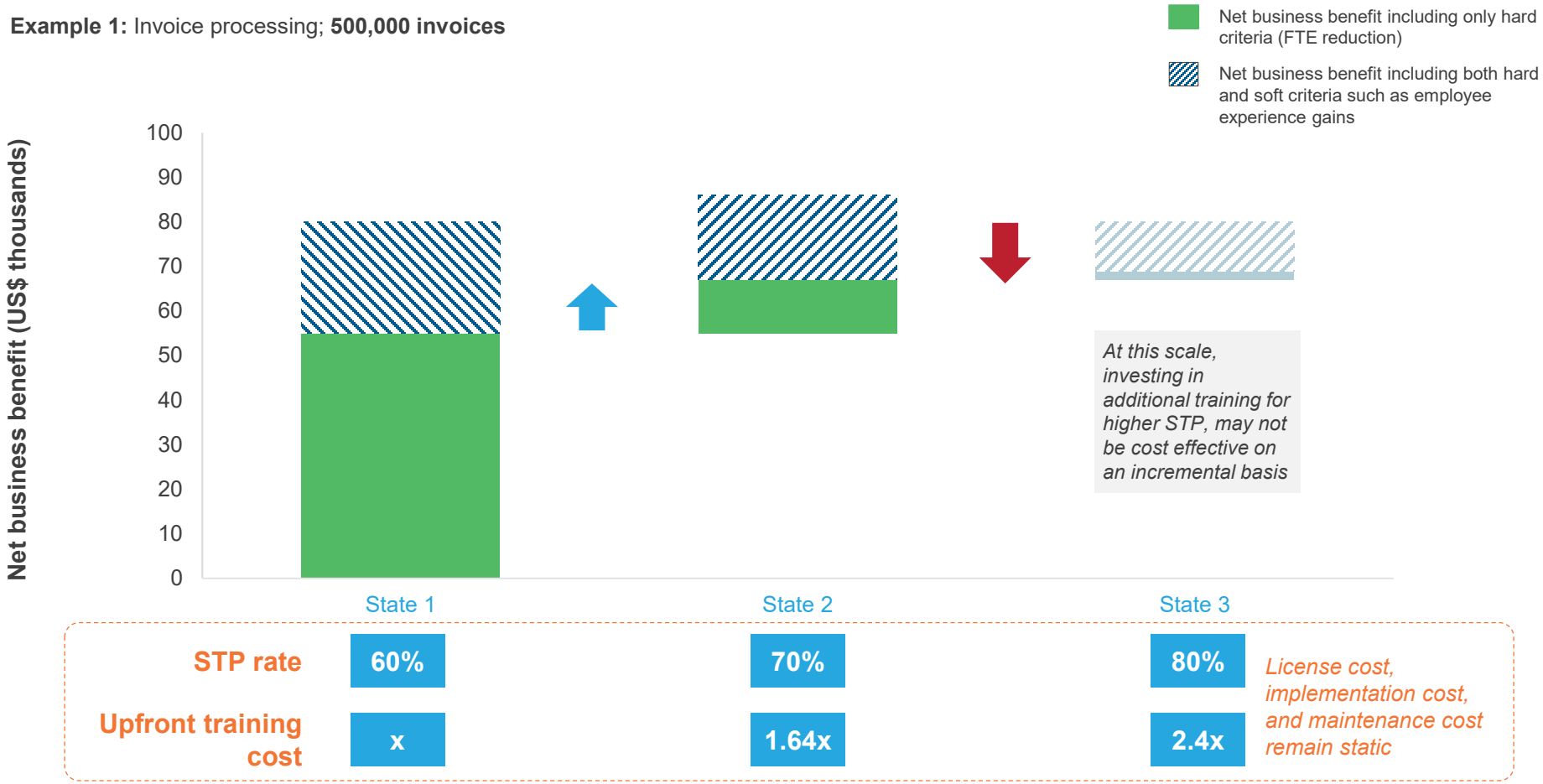
Create a business case and refine target outcome state

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

2

Identification of processes | Prioritization of processes | **Creating a business case**

Example 1: Invoice processing; **500,000 invoices**



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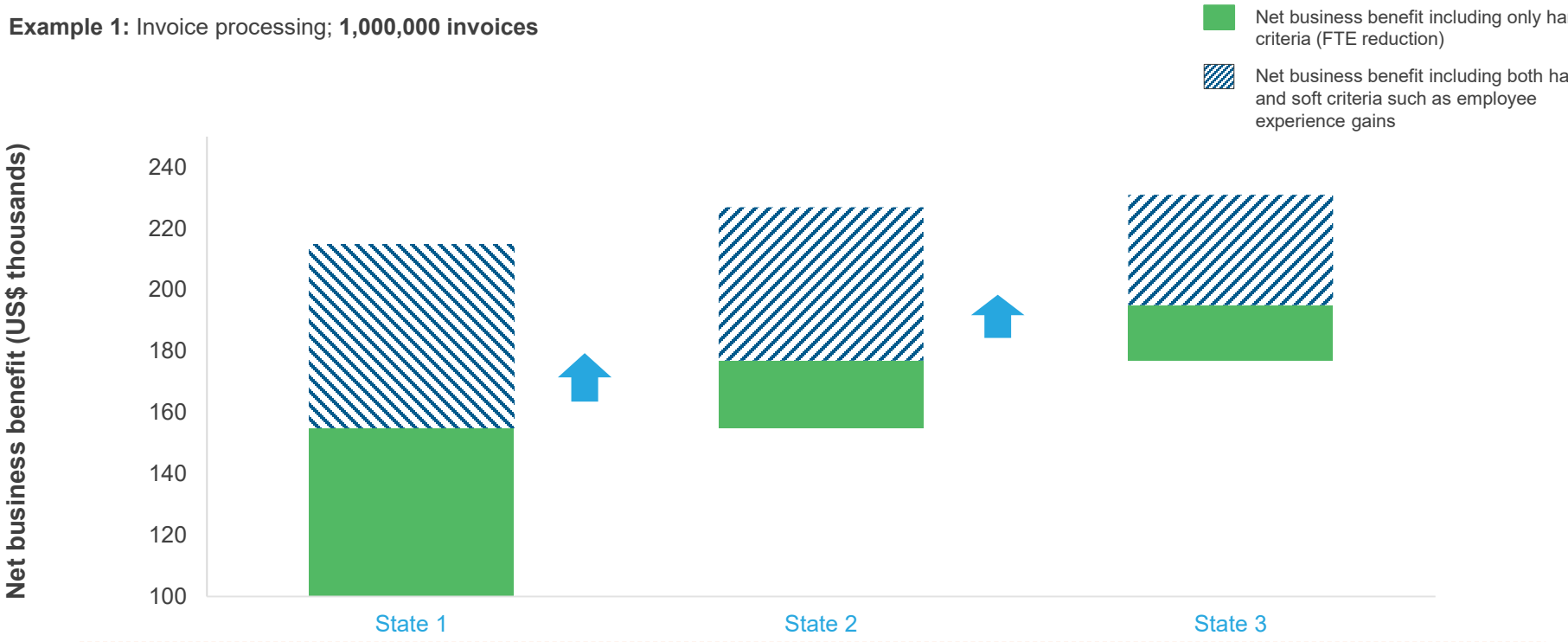
Create a business case and refine target outcome state

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

2

Identification of processes | Prioritization of processes | **Creating a business case**

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



	State 1	State 2	State 3
STP rate	60%	70%	80%
Upfront training cost	x	1.64x	2.4x

License cost, implementation cost, and maintenance cost remain static

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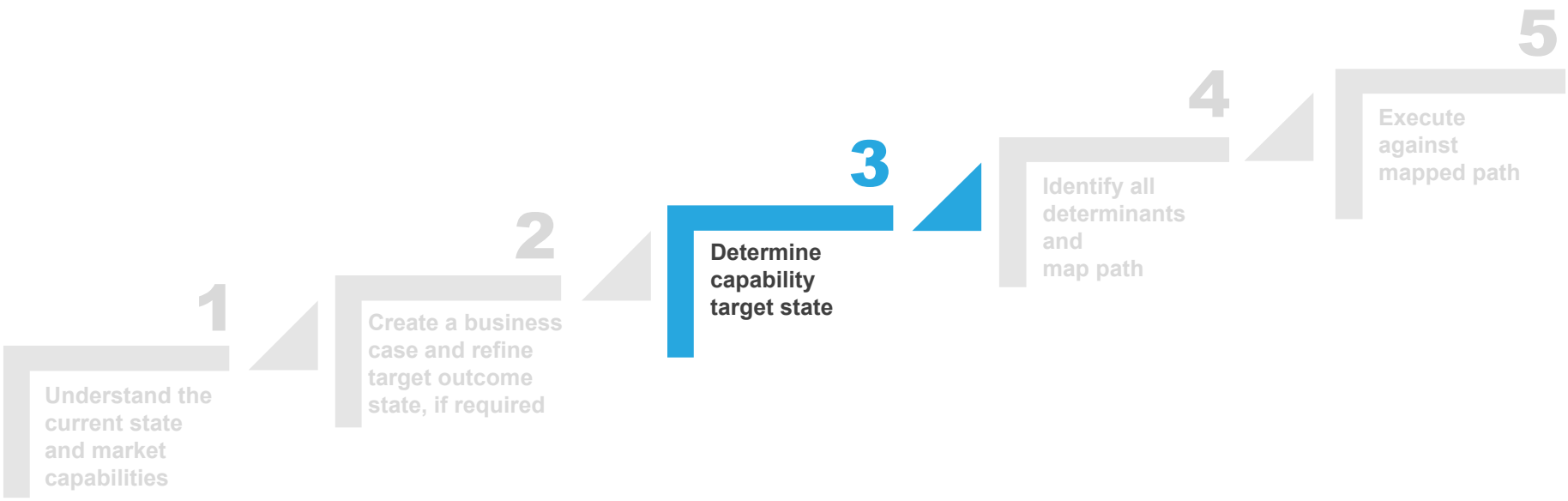
Enterprises can break down their IDP journey into five distinct steps



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Define target capability state

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

3

ILLUSTRATIVE

Required capability

Enterprise IDP capability maturity model

Journey components	Capability elements	Basic	Typical	Advanced	Pinnacle
Technology	Software learning	No training data sets are generated from manual review	Automatic generation of training batches during manual review; automatic feeding of data sets into the system for training	Automatic generation of training batches during manual review along with feature for enterprise users to approve training sets to improve accuracy	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
	Classification of documents	Do not have ability to automatically classify documents	Ability to identify discrete documents with low accuracy leveraging basic statistical approach	Ability to identify discrete documents with medium accuracy leveraging basic machine learning based approach	Ability to identify discrete documents and different pages within a stream of documents with high accuracy leveraging advanced neural networks
	Flexibility with ML algorithms	Fixed one pre-built ML algorithm for every use case / document type	Different pre-built ML algorithms for different use cases / document types	Different pre-built ML algorithms for different use cases / document types with an option for user to select the appropriate algorithm	Feature to recommend best ML algorithm to user to chose from different pre-built algorithms

ise IDP capability maturity model

		Typical	Advanced	Pinnacle
Technology	for digitizing ed text	OCR and ML based; document classification, data capture, and extraction using machine learning, and validation; block letters (typed)	OCR, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, auto ML, NLP, intent analysis, validation; block letters (typed or handwritten)	OCR, domain ontology, deep Learning, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, auto ML, NLP, intent analysis, and validation; cursive writing with good level of accuracy
	Pre-built use cases	No pre-built use case	Simple use cases involving semi-structured data such as invoice processing, customer onboarding, claims, etc.	Complex use cases involving unstructured data such as contracts, legal documents, etc.	Use cases that involve extracting information from free flowing text as well as NLG
	Hosting type	Physical, desktop-based	On-premise server-based	Private cloud-based, hybrid	Public cloud-based, hybrid
	Ancillary technologies	Standalone IDP solution	IDP solution integrated with BPM tool and RPA	IDP solution integrated with BPM, RPA, and analytics	IDP solution integrated with BPM, RPA, analytics, and other AI solutions

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Everest Group organizes IDP capabilities according to five key components of enterprises' IDP journey

3

Journey components	Key focus area
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
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
Organization & talent	• 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
Resourcing	• To assess the sourcing strategy, training, and education programs for various IDP skills

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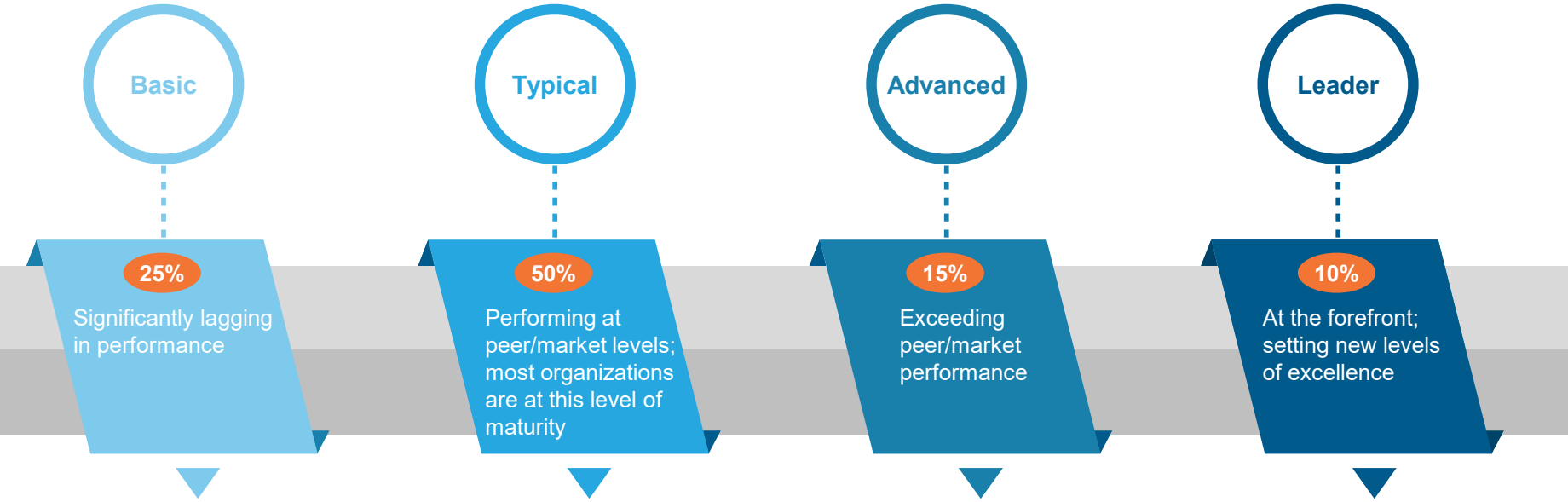
Enterprise IDP capability is assessed across four maturity levels

The four capability maturity levels

Approximate share of enterprises at each maturity level XX%



- 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

- 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

- Capabilities exceed typical performance levels
- Significant time and effort are put forth to develop advanced capabilities
- Delivers significant business outcomes

- 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

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Enterprise IDP capability is assessed across over 25 capability elements (page 1 of 2)

3

Journey components	Capability
A. Vision & strategy (7 capabilities)	A1. Primary drivers of IDP adoption A2. Funding/sponsorship A3. Project initiation A4. Security & risk preparedness for IDP A5. Metrics and KPIs for measuring benefits/impact of IDP A6. Metrics and KPIs for measuring effectiveness of IDP initiatives A7. Targeted document types for IDP adoption
B. Organization & talent (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

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Enterprise IDP capability is assessed across over 25 capability elements (page 2 of 2)

3

Journey components	Capability elements
D. Resourcing (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

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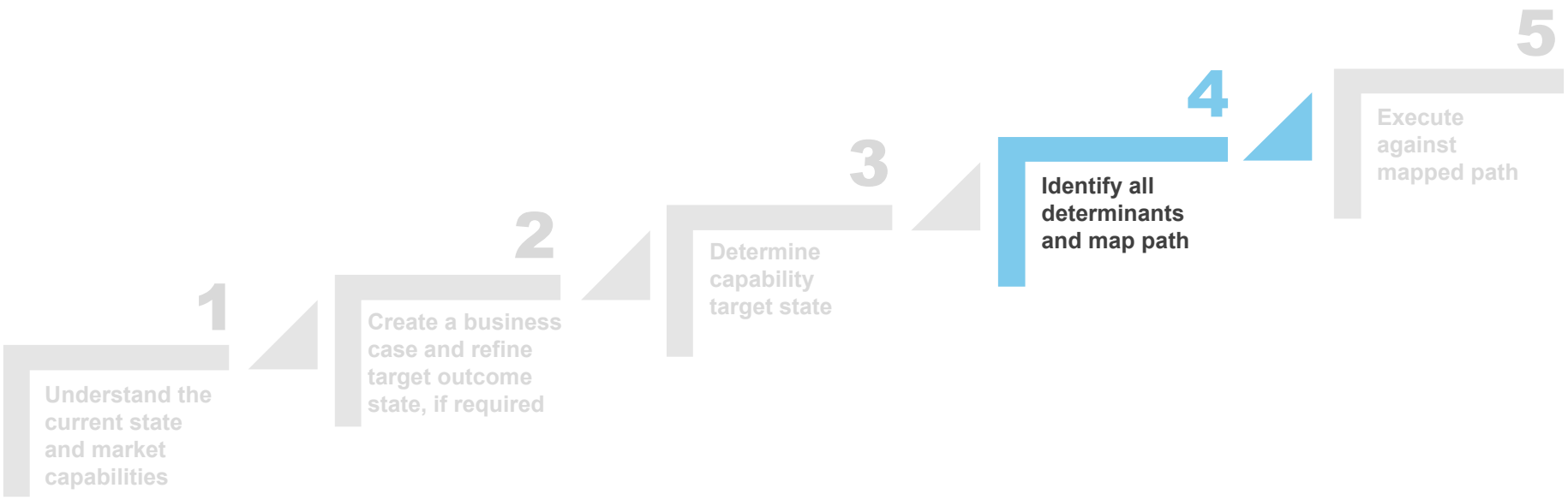
Enterprises can break down their IDP journey into five distinct steps



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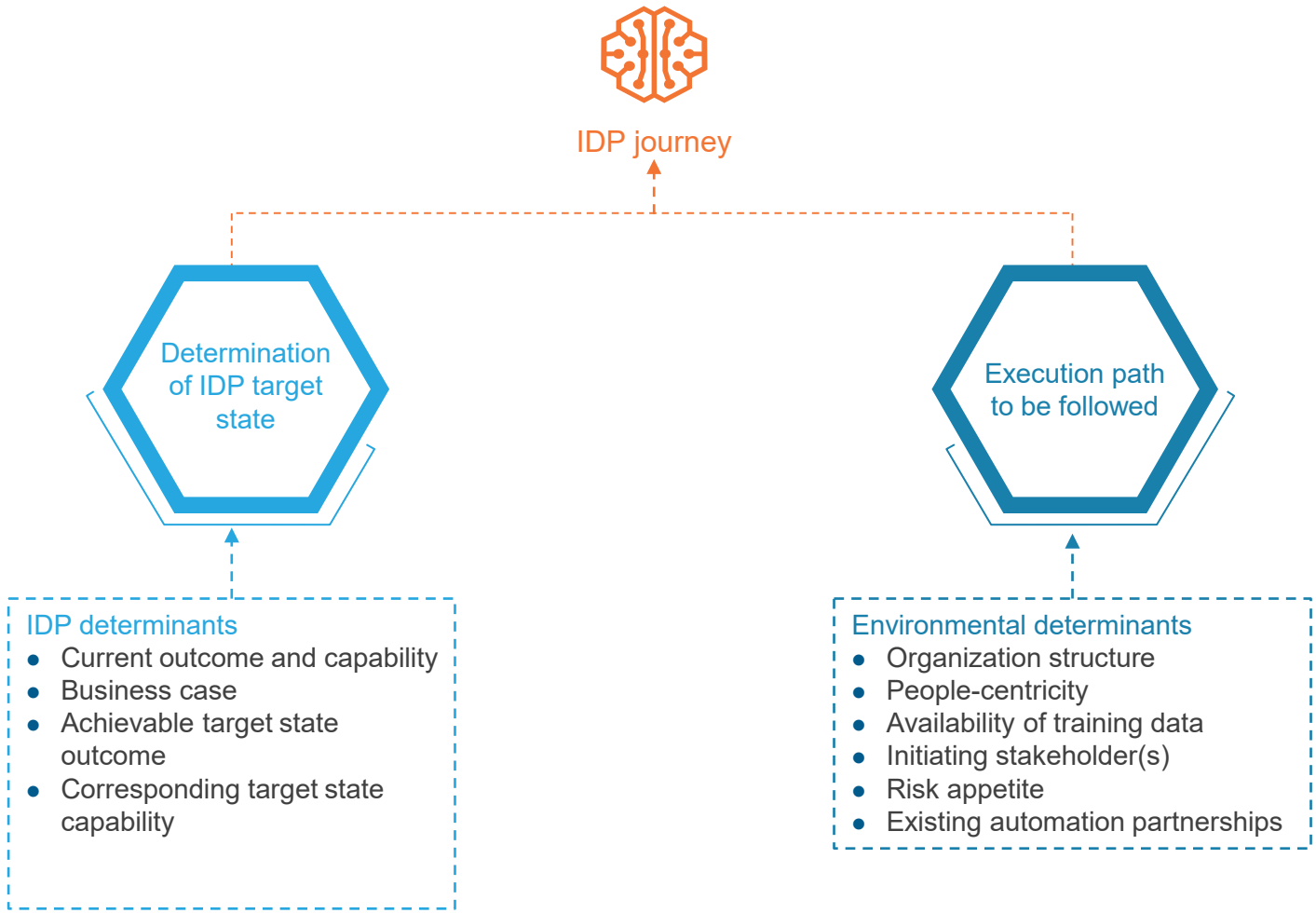
The IDP journey will take different forms based on two sets of determinants – IDP-related (science) and environmental (art)

4



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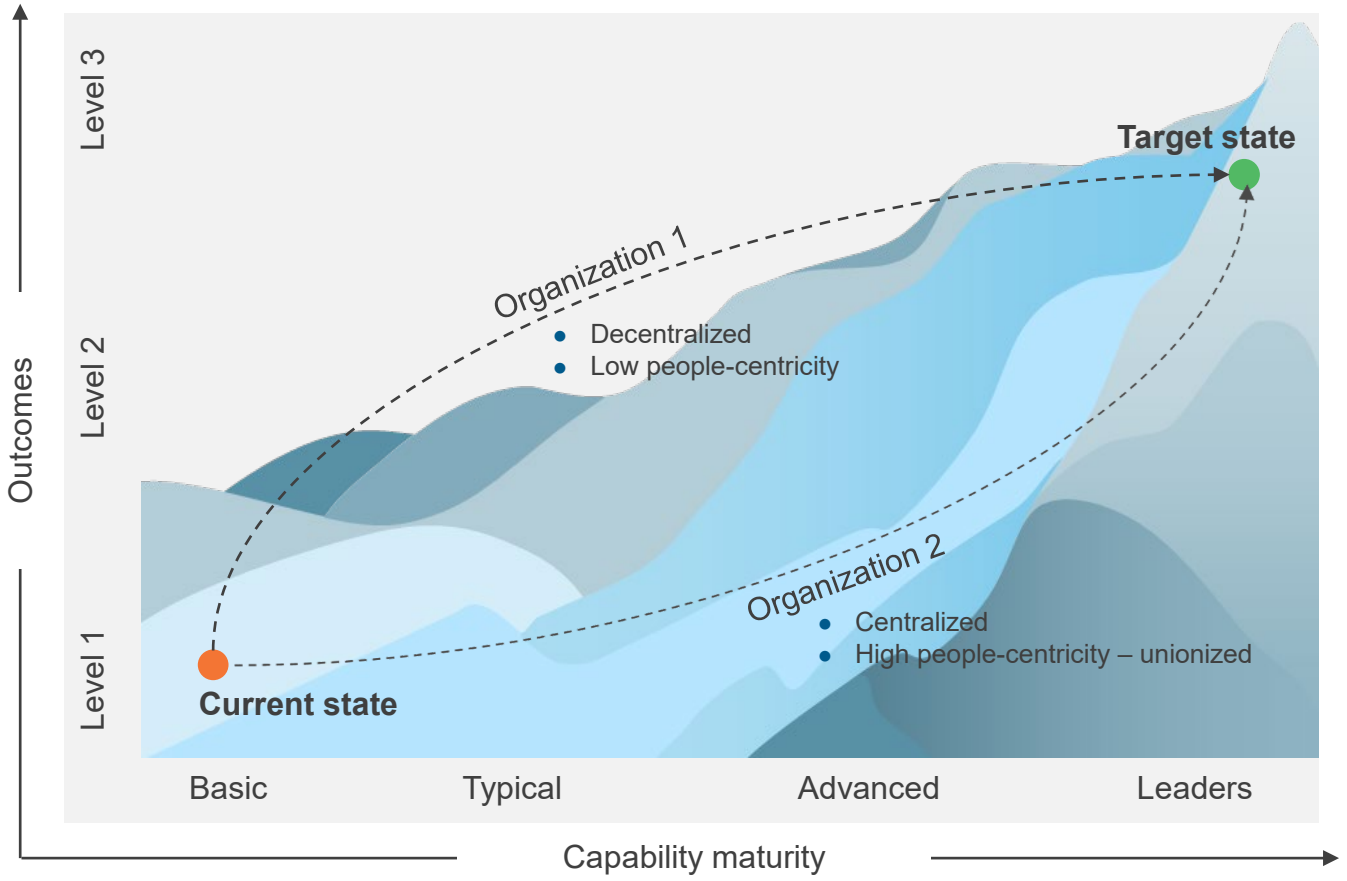
Given the same current and target states, enterprises' culture, structure, and other environmental determinants influence the routes they take

4

ILLUSTRATIVE



Two enterprises starting their journeys at the same low level of IDP maturity and wishing to reach the same advanced target state may take significantly different execution paths; the path would largely depend on environmental determinants.

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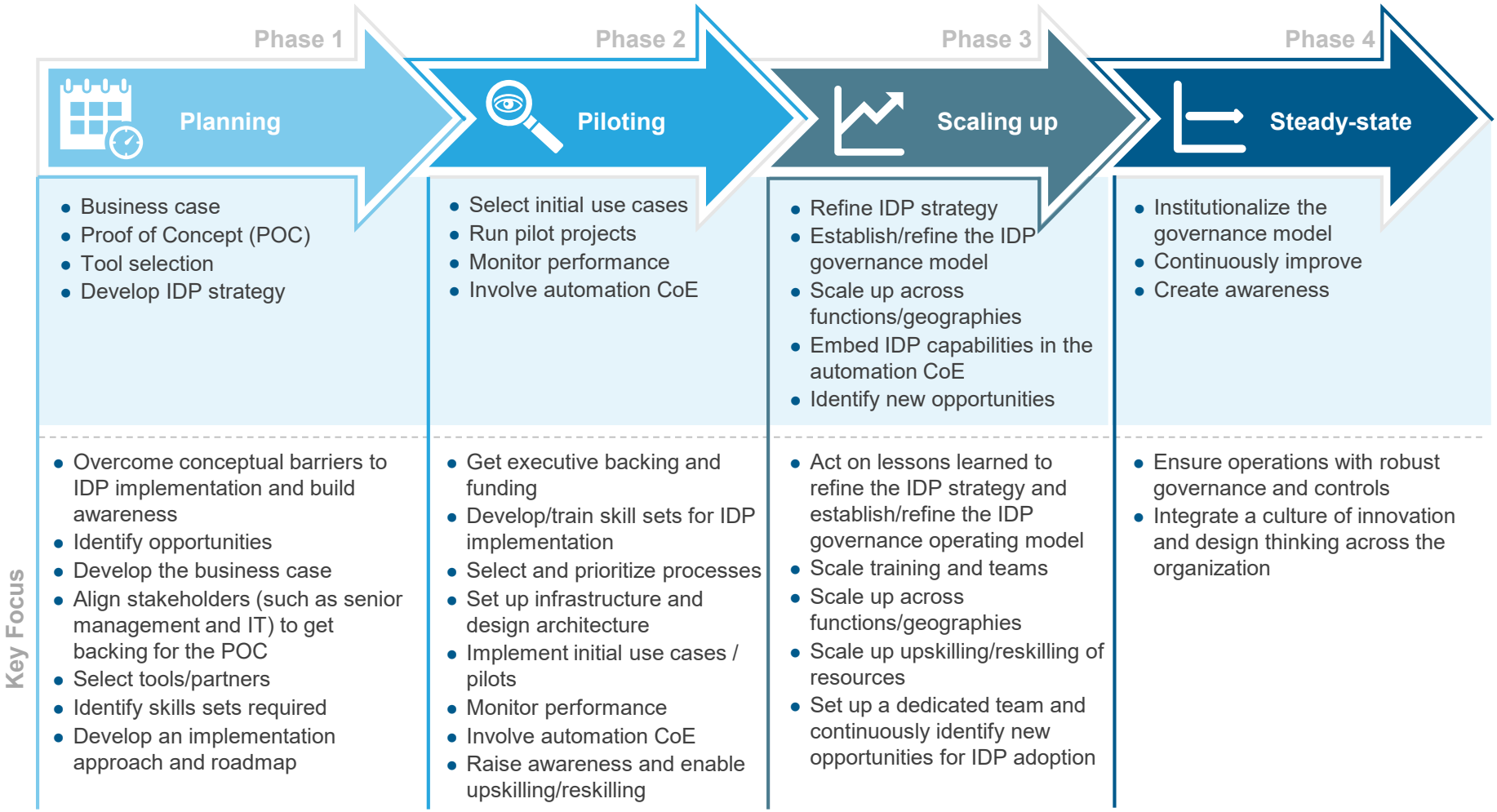
IDP execution paths can be broken down into four key phases

4

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



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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 invoice processing 4

Scope

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

- Current state: The organizations run a single ERP system with a workflow system for invoice processing. Invoice and delivery notes are manually entered from scanned PDF or image-based documents. Each has seven FTEs currently employed in each task
- Achievable target state: 65% STP rate for delivery notes and invoices

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

Environmental determinants

Organization A – digital-born transportation firm		Organization B – conservative manufacturing firm
Decentralized	Organization structure	Centralized
Low people-centricity	People-centricity	High people-centricity
IT-driven	Initiating stakeholders	Operations-driven
High risk appetite	Risk appetite	Low risk appetite; heavy regulation
Existing relationship with automation vendor	Existing automation partnerships	None on the automation front
All historical documents and extracted values are available	Availability of training data	Few historical documents and extracted values are available

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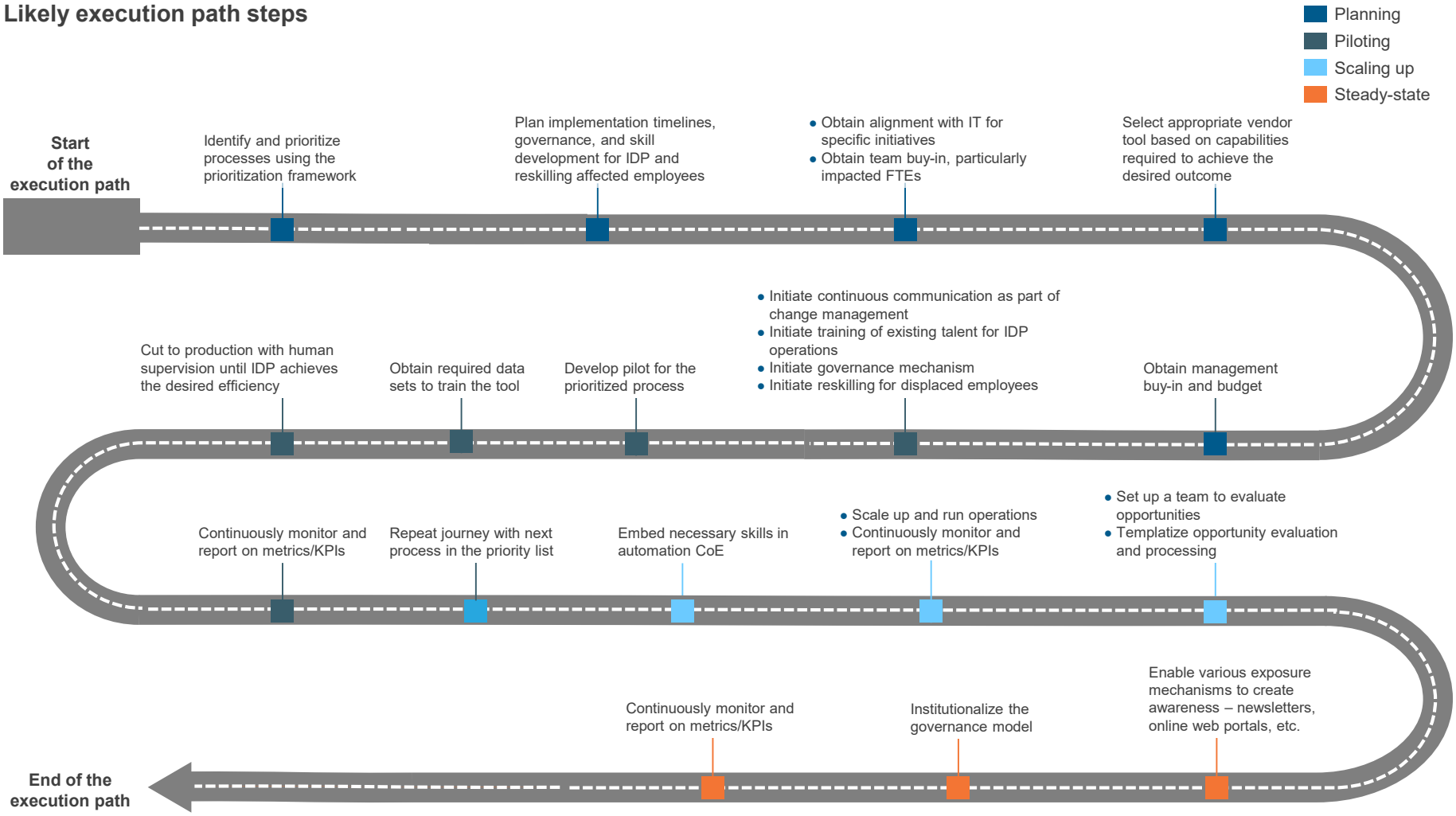
While all enterprises will likely follow a set of steps in the execution path …

4

Likely execution path steps



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… the nature of those steps will vary based on environmental determinants[1]

4

ILLUSTRATIVE

#	Steps	Determinants	Path options
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 sk… IDP and reskilling a…	• NA	• NA
3a	Obtain alignment w… implementation		
3b	Obtain team buy-in … impacted FTEs		
4	Select appropriate … on capabilities requ… desired outcome		
5	Obtain managemen… budget		

#	Steps	Determinants	Path options
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
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
6d	Initiate reskilling for… employees		
7	Develop pilot for the… process		
8	Obtain required dat… the tool		

#	Steps	Determinants	Path options
12	Embed necessary skills in 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	• NA
13b	Continuously monit… report on metrics/K…		
14a	Setup a team to ev… opportunities		
14b	Templatize opportu… evaluation and pro…		

#	Steps	Determinants	Path options
9	Cut to production with human supervision until IDP achieves desired efficiency	• Availability of data • Risk appetite	• Always employ a human in the loop • Employ a human in the loop for verification for highly sensitive processes only • Allow STP where possible, with only exceptions requiring human intervention
10	Continuously monitor and report on metrics/KPIs	• NA	• NA
11	Repeat journey w… in the priority list		

#	Steps	Determinants	Path options
15	Enable various exposure mechanisms to create awareness – newsletters, online web portals, etc.	NA	NA
16	Institutionalize the governance model	NA	NA
17	Continuously monitor and report on metrics/KPIs	NA	NA

1 Refer to pages 103-107 in the Appendix for a detailed list

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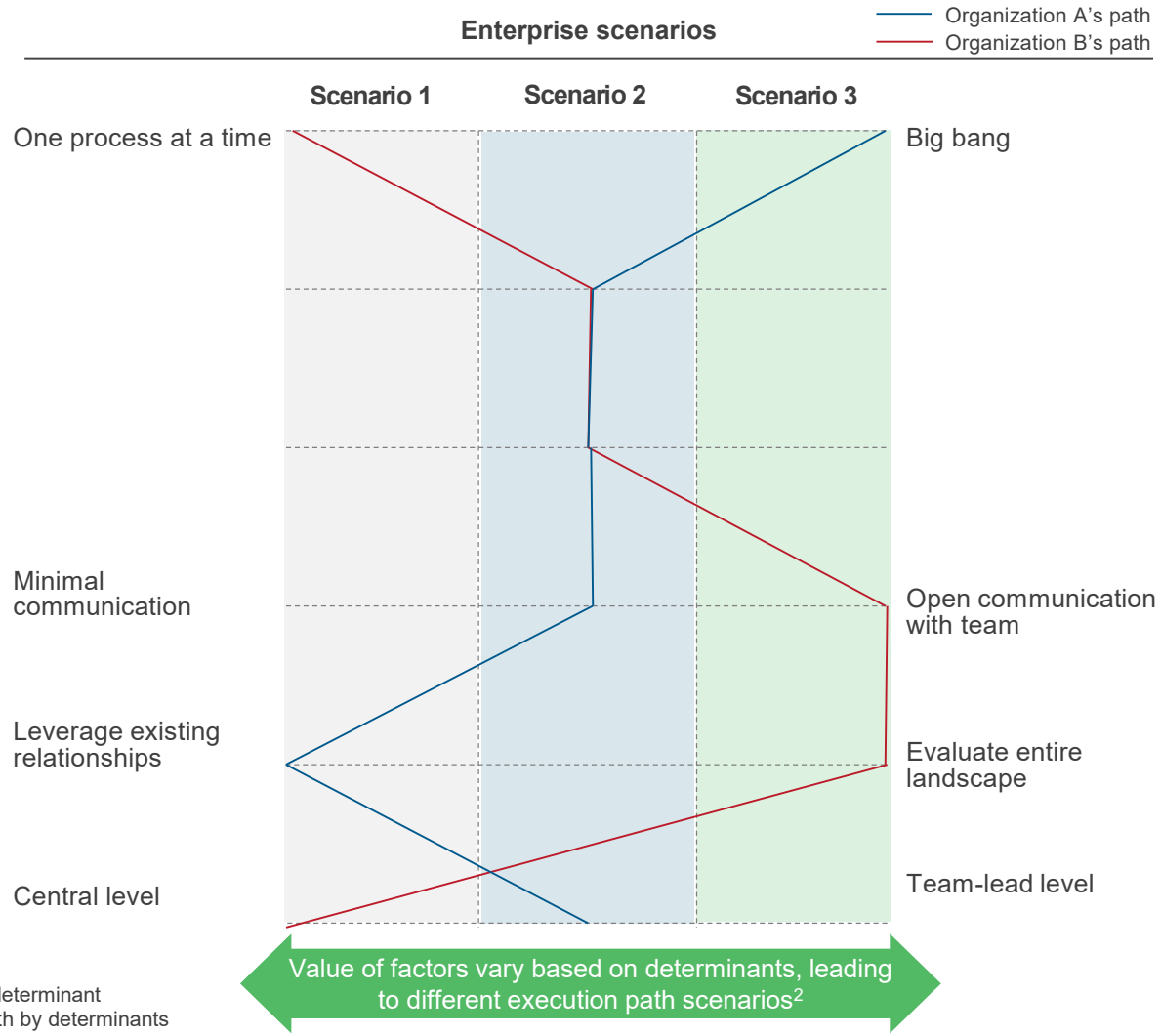
Execution paths differ based on environmental determinants
(page 1 of 2)

Execution path factors

- **Identify and prioritize processes using the prioritization framework**
- **Plan implementation timelines, governance, and skill development for IDP and reskilling affected employees[1]**
- **Obtain alignment with IT for IDP implementation[1]**
- **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



1 Step does not vary for organizations based on environmental determinant
2 Refer to Appendix pages 104-107 for variation of execution path by determinants

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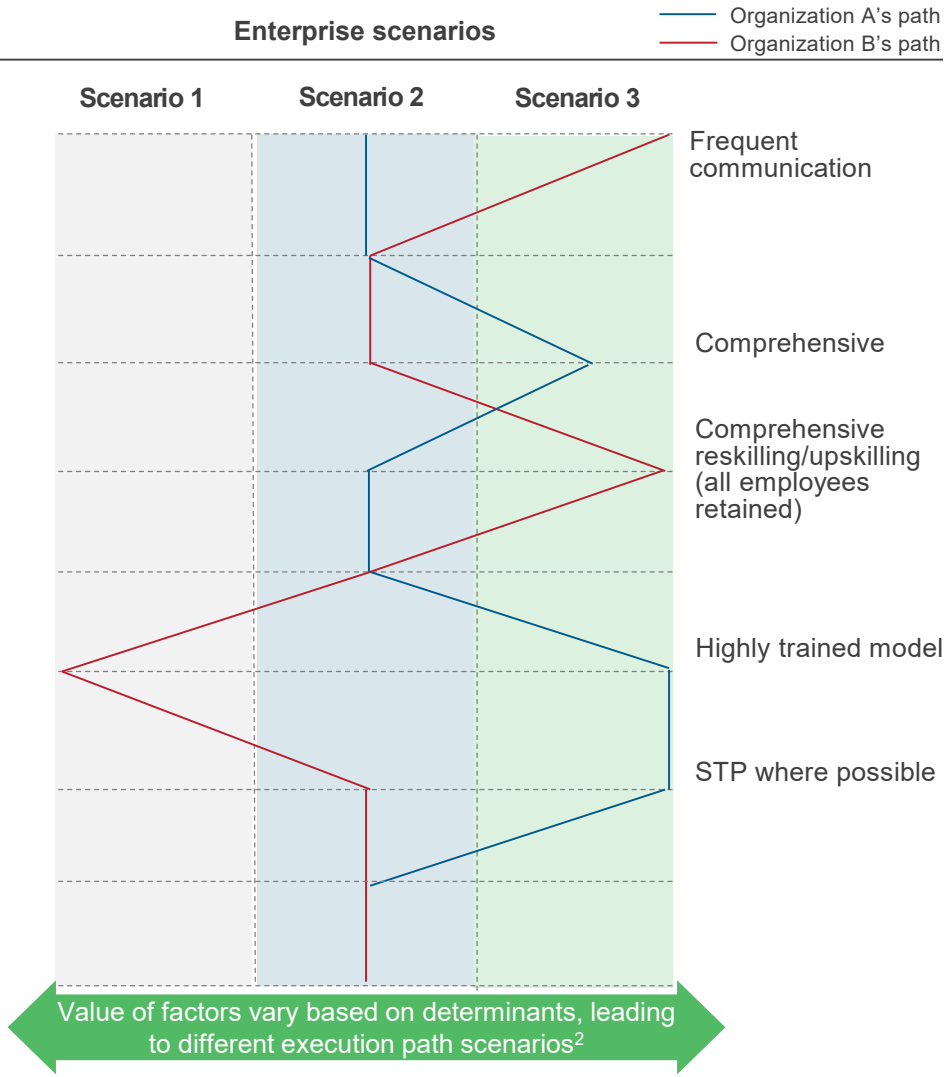
Execution paths differ based on environmental determinants
(page 2 of 2)

4

Execution path factors	Enterprise scenarios
Initiate continuous communication as part of change management	Low to no communication
Initiate training of existing talent for IDP operations[1]	
Initiate governance mechanism	Minimal
Initiate reskilling for displaced employees	No reskilling/upskilling – redundant employees let go
Develop pilot for prioritized process[1]	
Obtain required data sets to train the tool	Minimal
Cut to production with human supervision until IDP achieves the desired efficiency	Human in loop always
Continuously monitor and report on metrics/KPIs[1]	
Repeat journey with next process in the priority list[1]	



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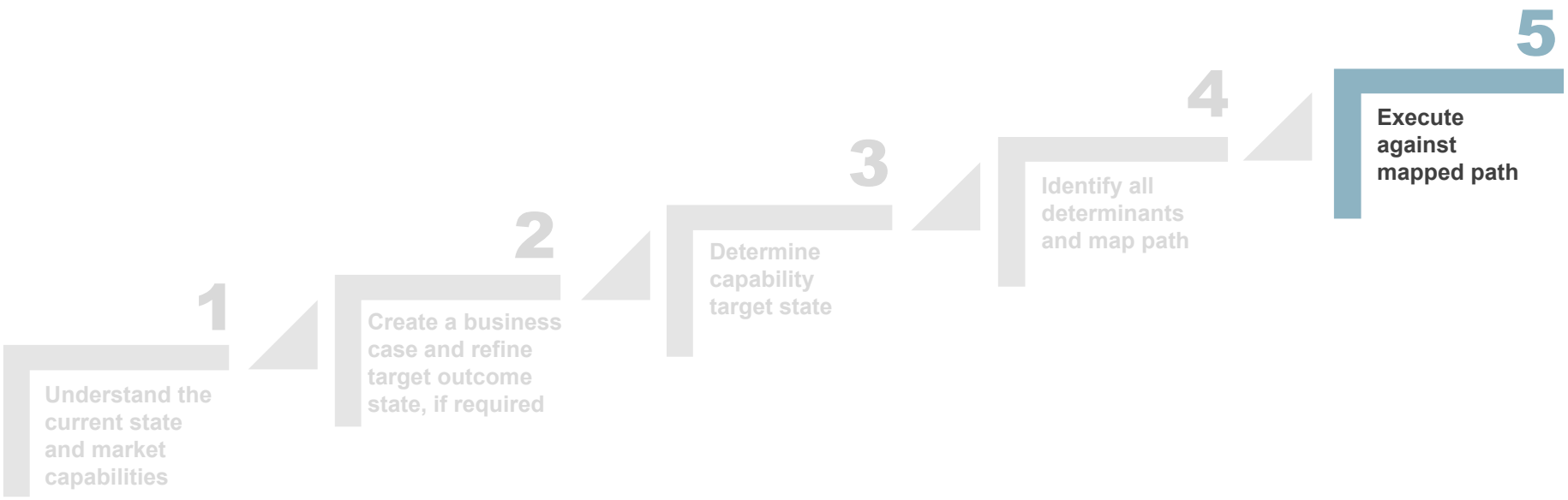
Enterprises can break down their IDP journey into five distinct steps



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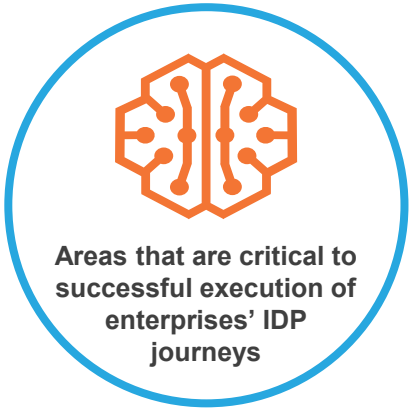
Having mapped the best-fit execution path, enterprises could leverage a variety of tools to develop an execution strategy and accelerate their IDP journeys

5



A Identifying and prioritizing processes for IDP adoption

B Selecting the right enterprise-grade IDP solutions

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

A

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.

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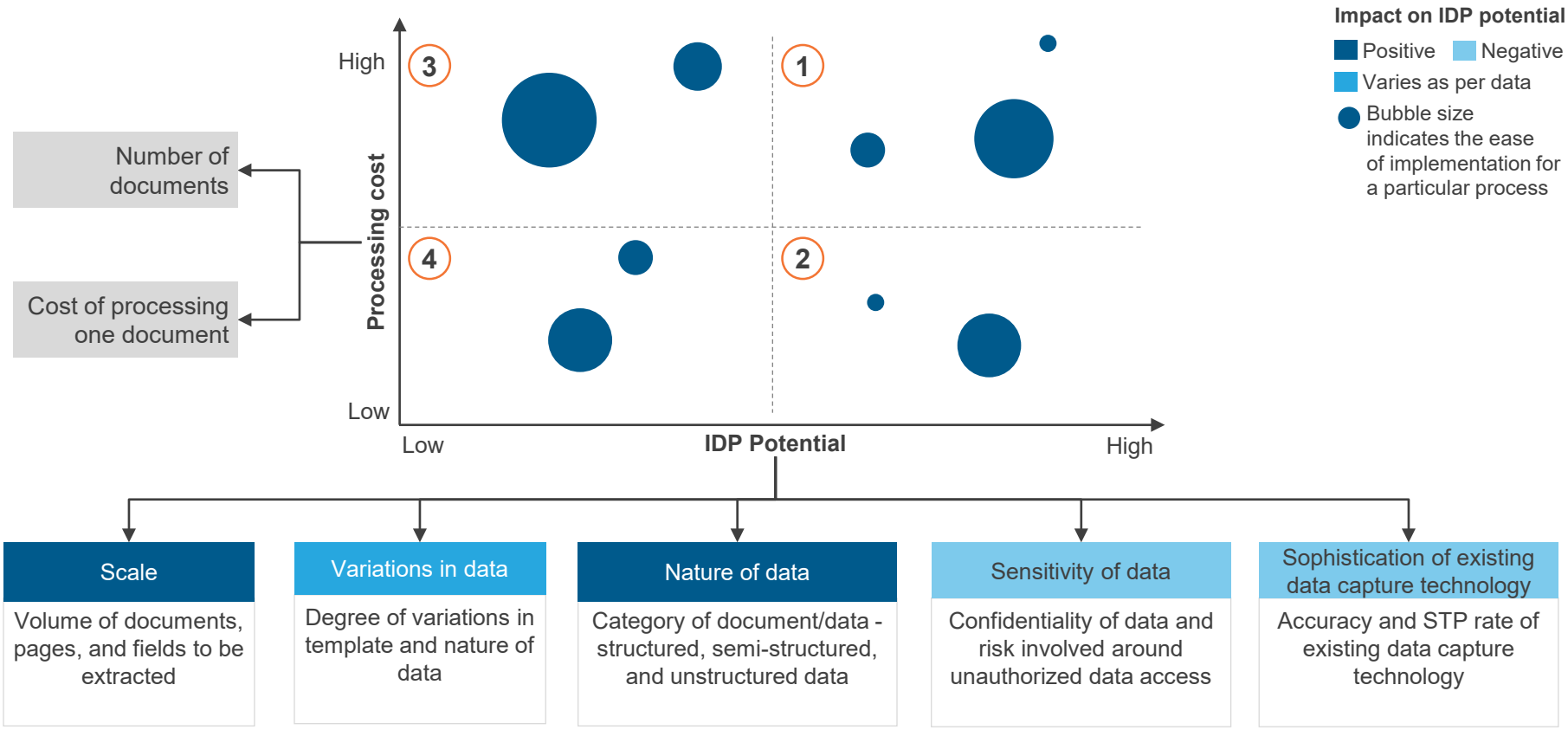

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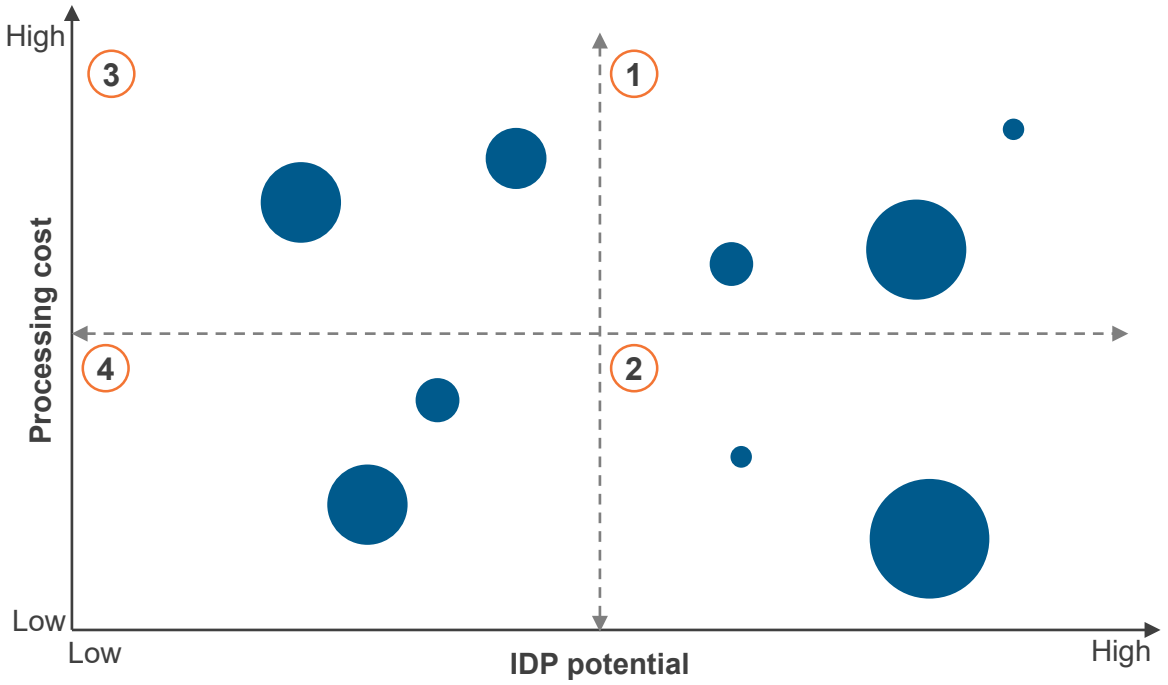
For phases 1 and 2, easily implementable processes that deliver the maximum net benefit should be considered; for further scale, other processes can be considered as well

A



Bubble size indicates the ease of implementation for a particular process

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

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Selecting best-fit enterprise grade solution

The IDP software market today majorly comprises two types of solutions: package-based and platform-based

B

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

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.

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Selecting best-fit enterprise grade solution

B

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

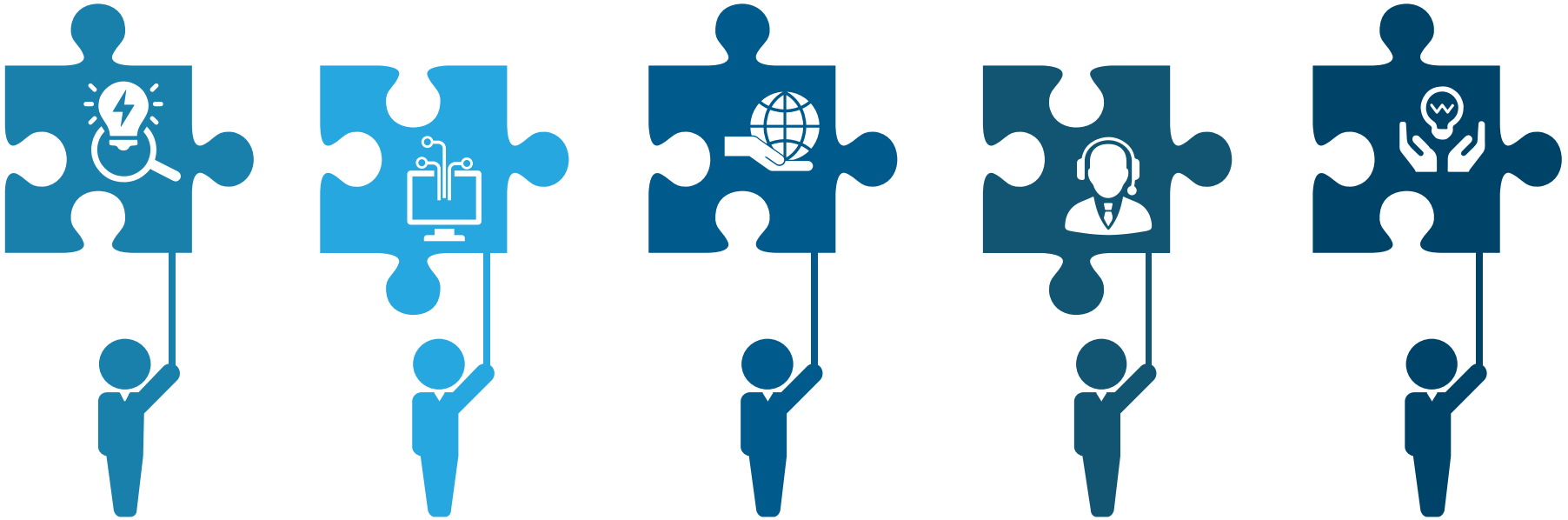
Solution capability

Ecosystem of partners for collaborative technologies

Ecosystem of services partners

Product training and support

Commercial models



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Selecting best-fit enterprise grade solution

Solution capability

B

Solution capability		
Dimension	**Capabilities**	**Brief on the capability**
Core technology capabilities	Image pre-processing	Improves quality of images and handwritten documents with features such as auto crop, background editor, and noise reduction.
	Document classification	Refers to automatic classification and sorting of incoming documents and the ability to route them to desired destinations.
	Machine learning & deep learning algorithms	Built-in ML & 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.
	NLP	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.

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Selecting best-fit enterprise grade solution

Solution capability

B

Solution capability		
Dimension	**Capabilities**	**Brief on the capability**
Other technology/ product capabilities	Configuration and set-up GUI	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 & extraction of fields, and modify business validation rules.
	Review GUI	The interface of the platform where processed documents are reviewed. It displays the confidence level for classification & 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.
	Analytics dashboard	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 & field-level processing, manual worker performance, number of errors fixed, time taken to fix the errors, etc.

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Selecting best-fit enterprise grade solution

Solution capability

B

Solution capability		
Dimension	**Capabilities**	**Brief on the capability**
Other solution considerations	Pre-trained solutions	Pre-trained out-of-the box solutions comes with reasonable accuracy (~60-70%) 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 machine learning models. It significantly reduces initial training time & effort and allow enterprises to start production quickly.
	Security features	Security features of IDP solutions include ability to encrypt, hide, or redact confidential data fields using various technologies before review and adherence to enterprise IT security standards & regulatory compliance requirements.
	Hosting	IDP solutions can be deployed on cloud, on-premise servers, and on 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.

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Selecting best-fit enterprise grade solution

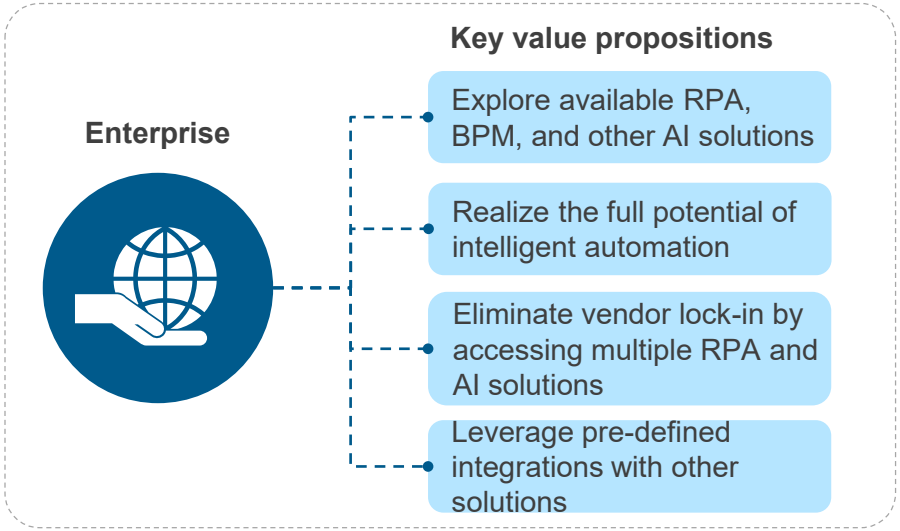
Ecosystem of partners for collaborative technologies

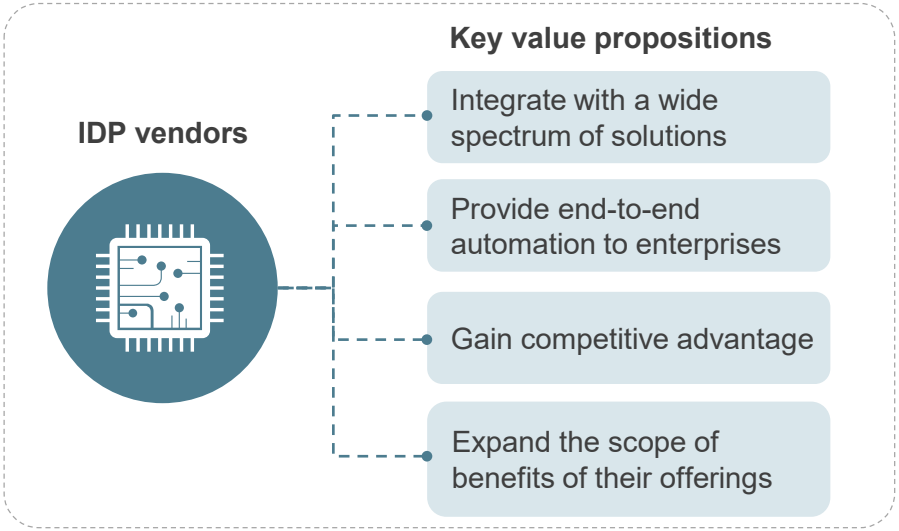
B

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 is able to 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





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Selecting best-fit enterprise grade solution

Ecosystem of services partners

B

Why training partners are important for enterprises while choosing an IDP vendor?

- Training partners provide their implementation and training expertise to help enterprises configure and deploy IDP solutions
- Since IDP solutions are evolving rapidly, training partners are required to train employees on new features/capabilities of the solution
- 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

Why implementation partners are important for enterprises while choosing an IDP vendor?

- Implementation partners include system integrators that help enterprises in implementing IDP solutions and overcoming challenges in deployment
- They can also be leveraged to overcome challenges in areas such as governance, business case realization, and scaling up
- Enterprises can also leverage them to set up automation CoEs

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Selecting best-fit enterprise grade solution

Product training and support

B

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

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Selecting best-fit enterprise grade solution

Commercial models

B

One-time fee

+

The IDP vendor or the System Integrator (SI) charges a one-time implementation fee that covers integrating the solution with the client's existing system, training the software, and providing implementation support

Traditional pricing model

Volume-based licensing

Enterprises pay on a monthly or annual basis, depending on the volume and complexity of the documents

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

Other pricing model

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

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While assessing an IDP vendor, enterprises should consider the vendor's investment and product roadmap to ensure a smooth journey in the future

B

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

Knowing the processes 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

Technology partnerships

IDP vendors who 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

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Key content

- Introduction to automation
- What is IDP and why is it important?
- IDP market characteristics
- The IDP journey
- **Challenges and best practices**
- Future outlook
- Appendix

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Challenges

Availability of data for training

- 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 depends 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

Internal resistance

- Resistance in acceptance & adoption of AI and related digital transformation initiatives
- Resistance from operations team for a new solution
- Buy-in of all teams is necessary for successful implementation

Lack of understanding of IDP solution

- Buyers' lack of understanding of AI technologies and how they solve business problems
- Enterprises' inability to distinguish between IDP and OCR-/template-based solutions

Expectation mismatch

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

Difficulty in estimating total benefits

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

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Best practices

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Best practices | Talent management (page 1 of 2)

Types of talent categories required for successful IDP implementation

Talent categories

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

Skill sets required for each of the categories are different.

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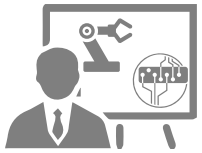
Best practices | Talent management (page 2 of 2)

Training and development



Creating awareness around capabilities & benefits of IDP solution

- 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

In-depth classroom/online training on the software

- 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

Support forum and help guides

Online support forum and help guides are useful for business analysts and operations specialists for quick resolution of their queries

Reskilling for impacted resources

- Many best-in-class adopters track metrics such as number of impacted resources and effort required for reskilling/upskilling as part of the process evaluation
- Some of these adopters have established formal, structured programs aimed at reskilling resources impacted by automation

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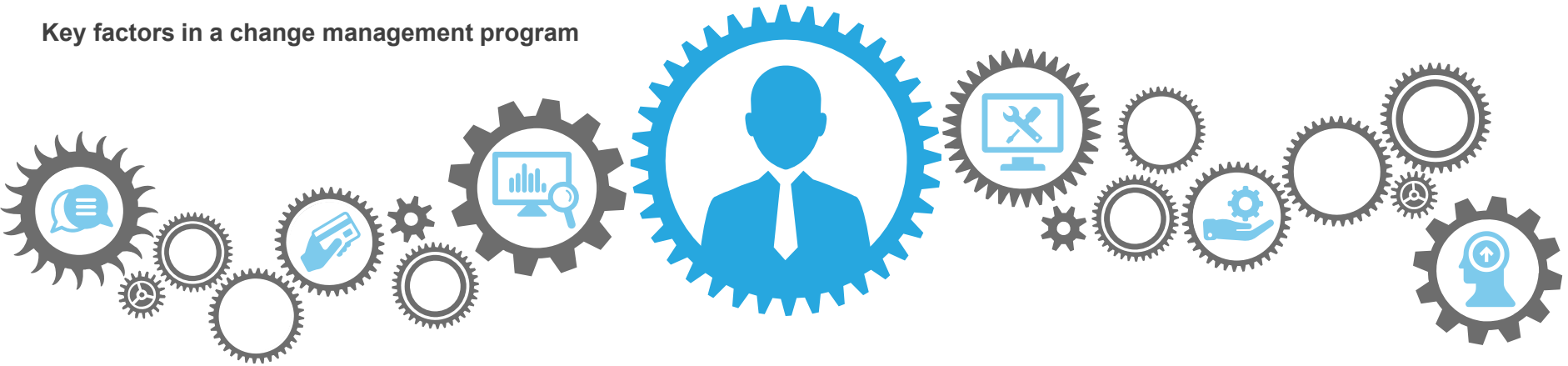
Best practices | Change management (page 1 of 2)

Key factors in a change management program

Key factors in a change management program



Communication	Getting buy-in from executive management & other support teams	Setting up robust metrics to monitor impact of IDP	Alignment between IT and business functions	Process ownership	Training programs (reskilling and upskilling)
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	• Strategic focus and executive backing lend direction to the IDP journey • Low or late buy-in from executive management may slow the implementation process. Thus, gaining key stakeholders' support is critical	• One of the important parameters in determining the success of IDP lies in continuously evaluating its performance • Identify and redefine existing metrics to continuously monitor and measure impact of IDP initiatives	• Challenges arise when the IT teams and business functions are not aligned on objectives/expectations • 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	• Change or confusion in management may lead to a delay in the transformation • Process ownership and drive by management generates support and push for employees to take the transformation journey seriously	• Training resources to operate with IDP by educating them on usage of IDP solutions and associated benefits is critical • Identifying the impact of IDP implementation on existing resources and planning an alternate path for impacted resources through reskilling/upskilling is essential

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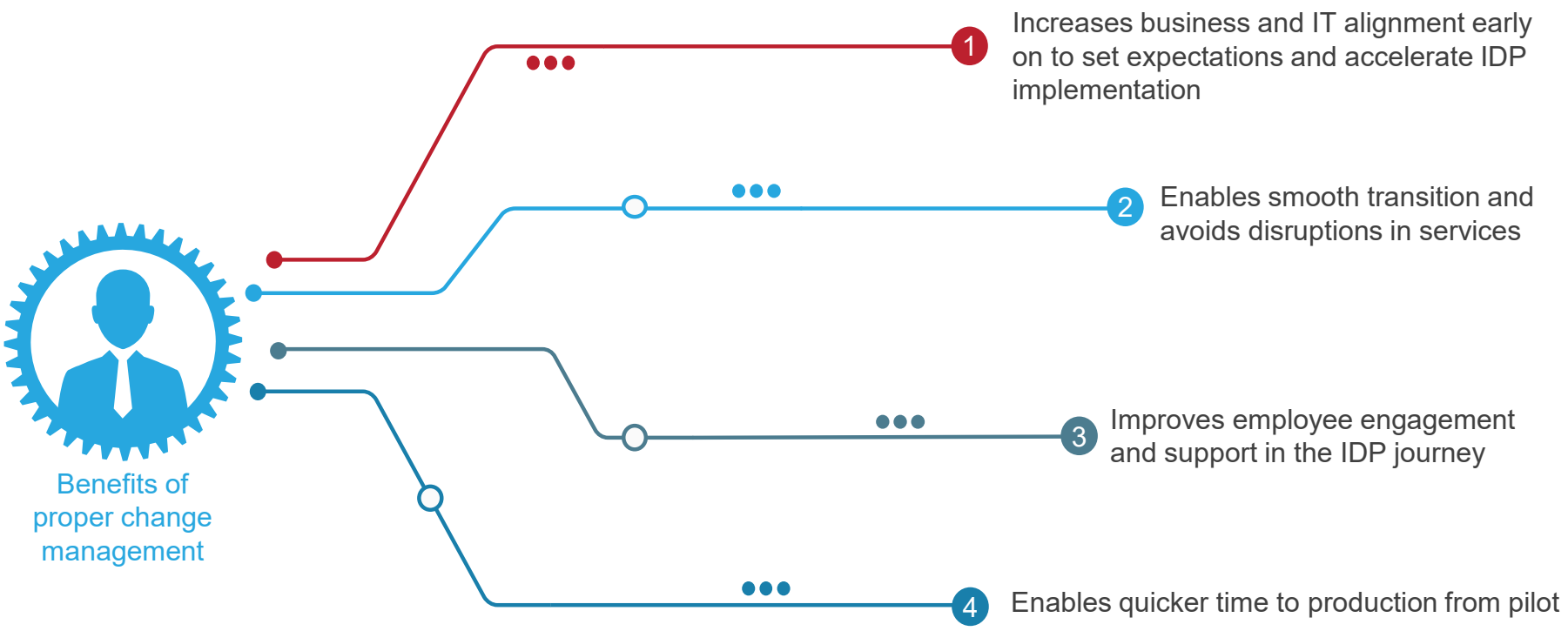
Best practices | Change management (page 2 of 2)

Robust change management is important for a smooth journey and faster implementation

Benefits of change management



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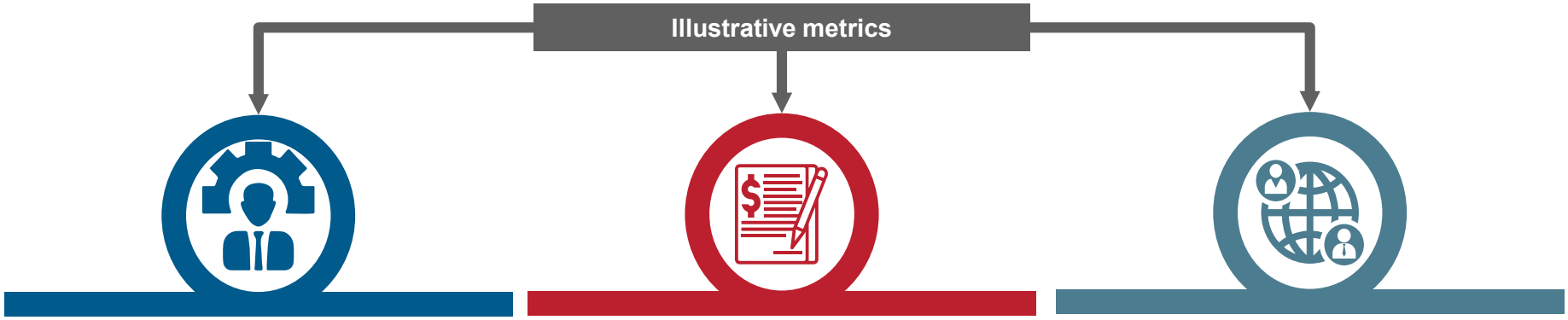
Best practices | Preparedness and performance monitoring

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



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

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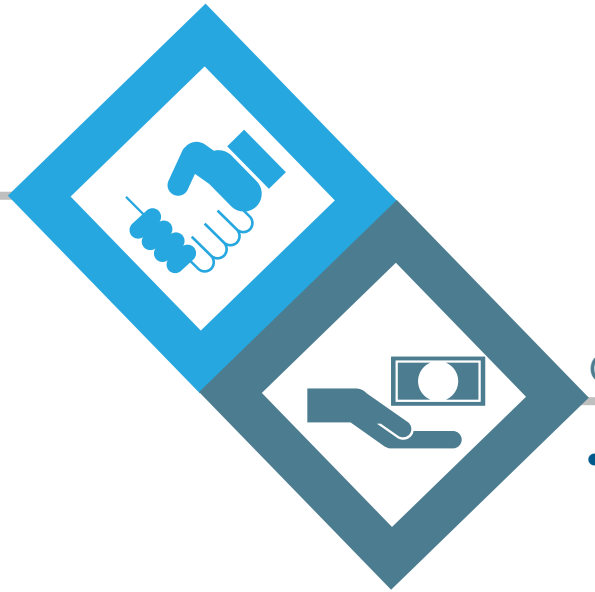
Best practices | Governance and expectations alignment

Well structured governance & funding mechanisms with alignment on expectations from IDP initiatives with business units play a key role in success of the IDP journey

Expectations alignment

- 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



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

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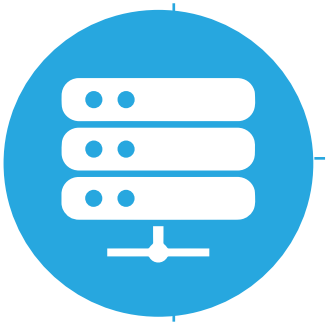
Best practices | Data availability



- 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 is also essential in training the model
- A formal and well-structured centralized data management practice will help to expand the scope and scale up quickly as documents can be used for training the model for other use cases

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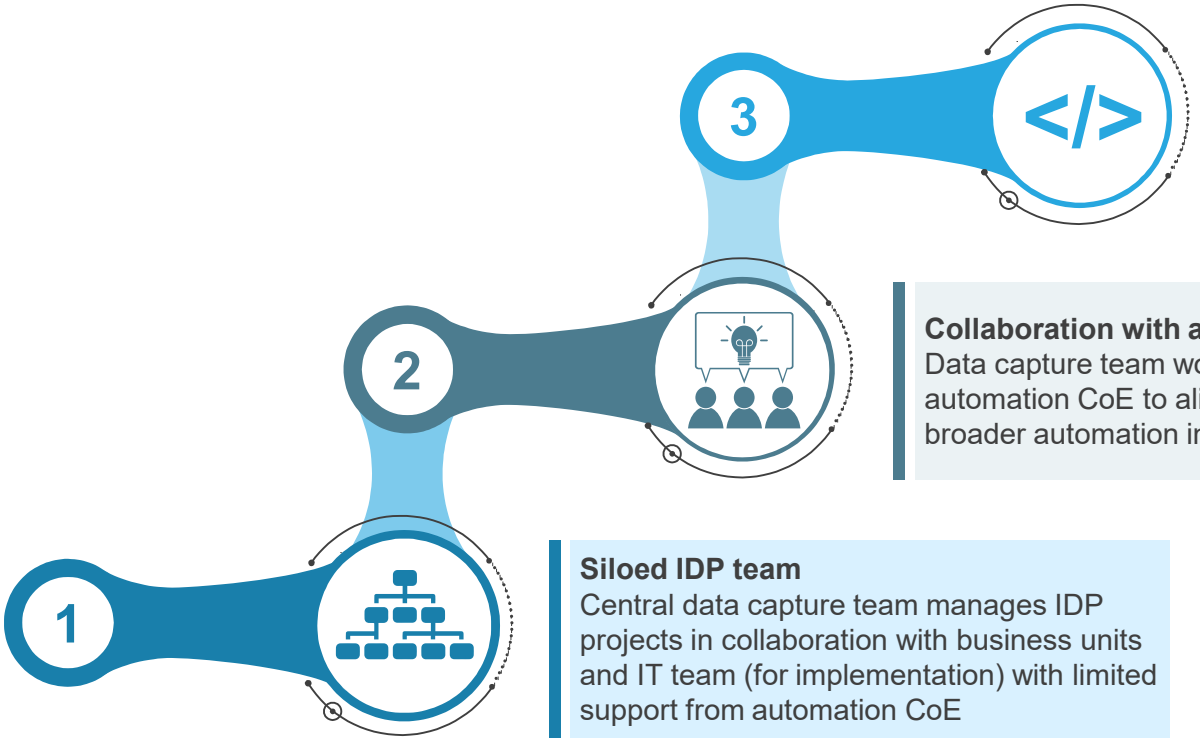
Best practices | Role of CoE

Increasing level of maturity



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

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

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

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Case studies | CRISIL

A credit rating company is leveraging IDP to improve top-line growth

CRISIL
An S&P Global Company

Overview

CRISIL is one of India's leading providers of credit ratings, industry research, and analytics. As part of its business process, CRISIL extracts huge volumes of financial information from a wide variety of documents including annual reports and quarterly statements. Prior to IDP implementation, a manual maker and checker model with traditional OCR was in place for this process. The enterprise wanted a solution that could extract data in an automated fashion (for the maker). With this objective in mind, it began its IDP journey in mid-2018 by partnering with AntWorks. It is currently using the solution to extract over 200 data points per document from over 12,000 documents annually

Challenges	Benefits
• The end objective is to achieve 85% accuracy. Currently it is at around 65% and will require more training to achieve the desired accuracy rate • Business expectations in initial stages needed to be realigned as technology maturity was evolving • Given the nature of business, the enterprise cannot completely get away with checker and there has to be human in the loop • Collection of historical source images pertaining to the processed data in systems for training purposes is a challenge	• Enterprise was able to position IDP in combination with their analytics solution to increase value proposition of their offerings. This will likely contribute to top-line gains • IDP implementation improved staff productivity by 15% in the initial stages and freed bandwidth was channelized towards new business areas

Learnings / winning insights

- Process prioritization is very important while considering IDP solutions. IDP solutions should be used for process that have higher volume of documents and with higher cost impact of FTEs
- STP / accuracy rates vary as per the use case and nature of business
- While some simple use cases may provide higher ROI at quicker time, complex ones may take longer than an year. Enterprises should prioritize between quick wins and long term benefits
- Expectation setting with business users on the benefits achievable and time taken to achieve ROI is important in the IDP journey

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Case studies | Mercer

An HR consulting firm replaced OCR with IDP for higher STP

Overview

Mercer is a human resources consulting and services firm, with considerable business in the benefits space. As part of assisting clients decide on renewals with carriers, Mercer's consultants had to extract and analyze data from proposals sent as PDF, memos, emails, etc. This process involved a high degree of manual intervention and was prone to errors, resulting in high operational costs. Mercer was using an OCR-based solution to aid extraction and wanted to move towards a more automated construct. As a means to achieve this, it started working with AntWorks, in early 2019, to adopt an IDP solution. The key objective of adoption of IDP solution is to improve operational efficiency, eliminate manual work, identify new revenue opportunities, and enhance customer experience

Challenges	Benefits
• Identification of optimal desired STP and accuracy rates was difficult • Estimation of effort required on training to achieve desired accuracy of near 100% • Identifying level of verification and training required on an ongoing basis is a challenge • Difficult to continuously train from captured human verification and corrections since they could be erroneous or false	• Achieved productivity gains through reduction in manual work in capturing data and consequently increased the utilization of resources in analytical activities • As-a-service model reduced its effort spent on infrastructure issues and enabled hassle free operations • Having successfully implemented the solution in their Benefits business, it is planning to take the solution to other business segments (under the parent organization) such as in insurance

Learnings

- It is important to be aware of evolution of technologies, especially automation technologies and its ecosystem to gain competitive advantage
- Robust data consolidation and data management practices accelerate the training duration and is crucial for successful IDP implementation
- IDP vendor has a crucial role to play as a strategic partner and can help provide guidance on best practices

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Key content

- Introduction to automation
- What is IDP and why is it important?
- IDP market characteristics
- The IDP journey
- Challenges and best practices
- **Future outlook**
- Appendix

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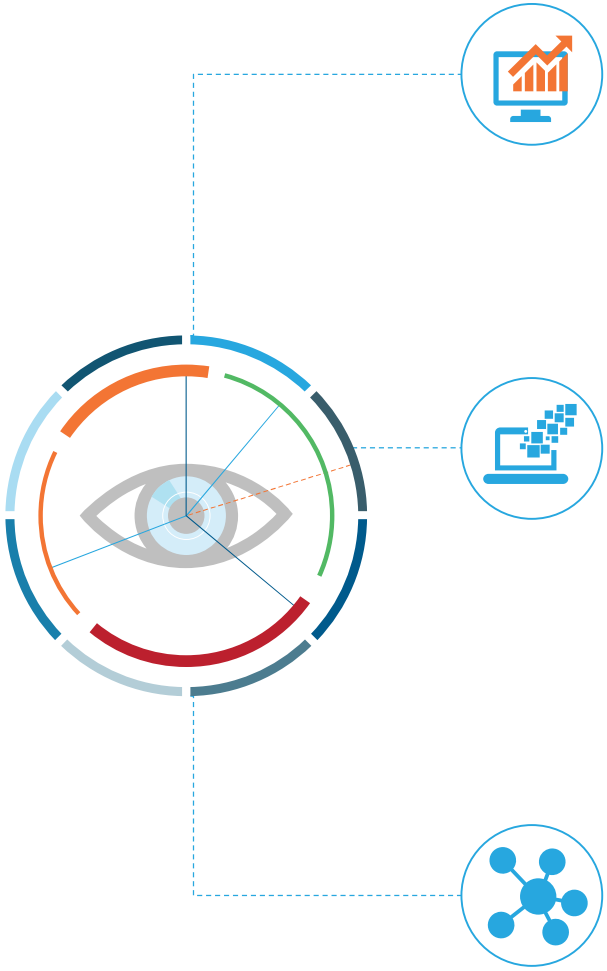
Future outlook



Market trends

- IDP solutions will replace traditional OCR-based solutions for document extraction as they offer STP to users with high accuracy
- While some industries such as large BFSI organizations are seeing faster adoption, adoption in other industries is expected to increase owing to success of initial pilots
- Going forward, as the market matures, advanced pricing models such as outcome-based where pricing is based on STP rate will become more prevalent
- In the near future, package-based solutions are expected to become more prevalent
- IDP vendors are expected to improve online user communities as more enterprises scale up and adopt their solutions

Technology trends

- Advances in AI - greater use of Generative Adversarial Networks (GANs), weak supervision, deep learning, etc., are likely to make software learning more effective and increase efficiency of solutions
- NLP technology in IDP solutions is expected to get more advanced to understand running text, understand context, consolidate the extracted data, and map the extracted fields to a defined taxonomy
- Complex use cases such as understanding of free-flowing text and creating summaries are expected to be introduced in coming years
- IDP solutions are expected to get more sophisticated with enterprise-grade features such as configuration & set-up GUI, review GUI, workbench for IT users, and analytics dashboards, constantly improving
- Out-of-the-box pre-trained IDP solutions for fast deployment and training will become common as solutions mature
- More effective techniques for noise reduction are expected to be introduced for better results

Expansion of ecosystem

- As enterprises mature in their IDP journeys, consolidation of broader transformation projects such as RPA and other AI initiatives under a single umbrella is expected
- To aid enterprises in expanding their digital ecosystem, IDP vendors are expected to integrate their stand-alone IDP products with other ancillary technologies either through an intelligent automation platform approach or integration of best-of-breed technologies through strategic partnerships

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Enterprise IDP CMM

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

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Vision & strategy	Security and risk preparedness for IDP	No major changes made to security and risk policies and worked around existing ones to accommodate changes required for IDP	Some changes to security and risk policies were made to accommodate IDP environments and scenarios	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	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; set up unique risk management protocols and controls for IDP and associated AI deployments
	Targeted document types for IDP adoption	Template-based documents (data in pre-defined template)	Template-based documents and documents with significant semi-structured data with limited variations	Template-based high volume documents and documents with significant semi-structured data with high variations	Template-based high volume documents and significant unstructured data (large multi-page documents such as legal contracts, low quality images, checks, and handwritten documents)

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Vision & strategy	Metrics and KPIs for measuring benefits/ impact of IDP (such as cost savings, ROI, speed, productivity, accuracy, compliance, and employee experience)	The organization currently does not use any well-defined metrics to measure returns from IDP investments; metrics used are ad hoc, poorly controlled, and reactive/chaotic	The organization has defined some basic cost and efficiency metrics along with existing IT metrics, which are repeatable in projects to measure returns from IDP investments	The organization has defined new metrics (employee experience, productivity, and speed) along with basic cost and efficiency metrics and existing IT metrics, which are repeatable in projects; the metrics are standardized across the organization to track the returns on IDP investments	The organization has defined new metrics (employee experience, speed, productivity, efficiency, cost, etc.) that are standardized across the organization and continuously optimizes the metrics to measure impact of IDP investments in near real time

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Vision & strategy	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)	The organization currently does not use any well-defined metrics to measure effectiveness of IDP initiatives; metrics used are ad hoc, poorly controlled, and reactive/chaotic	The organization uses some basic metrics such as number of documents processed along with existing IT metrics, that are repeatable in projects, to measure the effectiveness of IDP initiatives	The organization has defined a series of new metrics such as speed of configuration/ implementation, STP rate, time taken to process a document, number of documents processed that are standardized across the organization to track and measure the effectiveness of IDP initiatives as well as defined policies, procedures, and practices driven by flexibility to accommodate unique aspects of different business units	The organization has defined new metrics (speed of configuration/ implementation, efficiency of pre-trained algorithms, etc.) that are standardized across the organization; continuously optimizes the defined metrics, policies, procedures, and practices, to measure the impact of IDP investments and share best practices across different business units

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Organization & talent	IDP team structure	No dedicated IDP team within the organization; largely handled by existing imaging / data capture	Decentralized structure; each business unit forms a dedicated team for IDP initiatives leveraging both existing imaging / data capture team and additional skill sets	Centralized dedicated IDP team that defines and implements IDP initiatives for the entire organization	IDP team embedded in automation CoE that can either be centralized or decentralized (hub & spoke model) to cross leverage skill sets to implement IDP initiatives
	Scope of automation CoE	Less than 30% of IDP projects are governed by the CoE	Around 30-60% of the IDP projects are governed by the CoE	Around 60-80% of the IDP projects are governed by the CoE	More than 80% of the IDP projects are governed by the CoE

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Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Organization & talent	Roles and responsibilities of the CoE	Drive the roll-out and implementation of IDP projects and ensure coordinated communication with relevant stakeholders; loosely defined roles, responsibilities, and skill sets required	Ensuring quality and compliance through well-defined standards, procedures, and guidelines, owned and developed by the CoE for broader digital initiatives; drive the roll-out and implementation of IDP projects and ensure coordinated communication with relevant stakeholders; some key roles and responsibilities are well-defined	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	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

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Organization & talent	Primary use of performance data	Monitoring performance of IDP applications	Monitors performance of IDP applications; refines the model to improve accuracy	Monitors staff productivity along with performance of IDP applications locally to find gaps in existing processes to optimize and streamline them to increase efficiency	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
	Focus on tracking/optimizing effectiveness and benefits achieved	Collection and usage of performance and impact data are ad hoc, sporadic, and uncoordinated	Performance and impact data is collected periodically (quarterly) to produce reports and dashboards to gain new insights that improve operational efficiency	Performance and impact data is collected periodically (monthly) to produce reports and dashboards with to gain new insights that improve operational efficiency and enhance efficacy of training algorithms	Performance and impact data is regularly collected/monitored weekly and used in a coordinated fashion to make operational decisions
	Reusability of models	No reusable models	Reusability of models is limited to business units	Reusability of models across business units and geographies	Reusability of models across business units, geographies, and similar document types (through transfer learning)

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Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Organization & talent	Level of employee engagement	Few people proactively engaging in some of the IDP initiatives	More believers who engage in IDP initiatives	Organization-wide employee engagement; some internal experts to facilitate engagement; developing a culture of innovation and design thinking	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
	Nature of impact on employees	No attempt to redeploy/reskill/upskill employees released due to IDP initiatives	Modest attempts made to redeploy employees released due to IDP initiatives in other areas (such as minimal investment and management commitment)	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)	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)

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Technology	Software learning	No training data sets are generated from manual review	Automatic generation of training batches during manual review; automatic feeding of data sets into the system for training	Automatic generation of training batches during manual review along with feature for enterprise users to approve training sets to improve accuracy	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
	Classification of documents	Do not have the ability to automatically classify documents	Ability to identify discrete documents with low accuracy, leveraging basic statistical approach	Ability to identify discrete documents with medium accuracy, leveraging basic ML-based approach	Ability to identify discrete documents and different pages within a stream of documents with high accuracy, leveraging advanced neural networks
	Flexibility with ML algorithms	One fixed pre-built ML algorithm for every use case / document type	Different pre-built ML algorithms for different use cases / document types	Different pre-built ML algorithms for different use cases / document types with an option for user to select the appropriate algorithm	Feature to recommend best ML algorithm to user to choose from different pre-built algorithms

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Technology	Sophistication of document processing	Basic OCR for digitizing content; typed text	OCR- and ML-based; document classification, data capture, and extraction using machine learning and validation; block letters (typed)	OCR, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, auto ML, NLP, intent analysis, and validation; block letters (typed or handwritten)	OCR, domain ontology, deep learning, auto ML, and NLP; document classification, data capture, and extraction using real-time/active learning, auto ML, NLP, intent analysis, and validation; cursive writing with good level of accuracy
	Pre-built use cases	No pre-built use case	Simple use cases involving semi-structured data such as invoice processing, customer onboarding, and claims	Complex use cases involving unstructured data such as contracts, and legal documents	Use cases that involve extracting information from free-flowing text as well as NLG
	Hosting type	Physical, desktop-based	On-premise, server-based	Private cloud-based, hybrid	Public cloud-based, hybrid
	Ancillary technologies	Stand-alone IDP solution	IDP solution integrated with BPM tool and RPA	IDP solution integrated with BPM, RPA, and analytics	IDP solution integrated with BPM, RPA, analytics, and other AI solutions

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Enterprise IDP CMM

Enterprise IDP capability maturity model					
Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Resourcing	Sourcing of IDP talent	Leverage only vendor resources	Leverage vendor resources and existing data capture / imaging resources with proper training on IDP	Leverage vendor resources, existing data capture / imaging resources, and limited automation resources	Leverage broader automation resources by cross-skilling IDP and automation resources, enabling resourcing across automation initiatives as per the required bandwidth
	IDP training and education	Basic initial IDP training by vendors	Well-structured IDP internal training program in addition to initial training by vendors; focused on implications of IDP	Integrated external and internal, well-structured training programs that are continuously reviewed and optimized	Well-structured IDP internal and external training programs that are integrated with broader automation training programs that are continuously reviewed and optimized

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Enterprise IDP CMM

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Journey components	**Capability elements**	**Basic**	**Typical**	**Advanced**	**Pinnacle**
Implementation (scale, scope, and speed)	Distribution of IDP projects by stage	Most of the IDP projects are in the planning stage	Most of the IDP projects are in the pilot stage	Most of the IDP projects are being scaled up from the pilot stage	Most of the IDP projects are in steady-state implementation stage
	Scale of IDP adoption	Less than 10% of the viable documents leveraging IDP solutions	Around 10-30% of documents leveraging IDP solutions	Around 30-60% of documents leveraging IDP solutions	More than 60% of documents leveraging IDP solutions
	Scope of IDP deployments across functions	One document categories	Two to four document categories	Five to eight document categories	More than eight document categories
	Speed of IDP adoption	One IDP license per year on an average	Two to five IDP licenses per year on an average	Five to 10 IDP licenses per year on an average	More than 10 IDP licenses per year on an average

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Environmental determinants

Organization structure	Highly centralized, with little independent decision-making	Partially centralized with portions of decision-making federated to BUs	Largely federated decision-making – BUs have a large degree of freedom to make their own decisions
People centricity	Highly people-centric organization – the overall culture is people-driven rather than efficiency-driven	Middle-ground organization with focus on people as assets, with efficiency also playing a role	Efficiency- and/or technology-driven organization
Initiating stakeholder(s)	Operations-driven initiatives – driven by operations analysts trying to make their jobs easier	IT-driven initiatives with BU support	Centrally-driven, typically by the C-suite or one level below with all BUs and IT falling in line
Risk appetite	Low risk appetite – need to have multiple layers of checks and balances for any initiative	Medium risk appetite – willing to take risks in select scenarios, especially when dictated by the market	High risk appetite – willing to take risks in the hope of market leadership and payoff
Existing automation partnerships	No existing automation partnerships	Medium risk appetite – willing to take risks in select scenarios, especially when dictated by the market	Existing partnerships with organizations that also play in the automation space
Availability of training data	Documents are not maintained properly; few documents and associated values are available and accessible	Documents are managed properly; most of the documents are available, but the associated extracted values are not readily available	Documents are managed properly; most of the documents and associated extracted values are easily available and accessible

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Variance in execution path steps for organizations by environmental determinants

Planning

#	Steps	Determinants	Path options
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

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Variance in execution path steps for organizations by environmental determinants

Piloting

#	Steps	Determinants	Path options
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

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Variance in execution path steps for organizations by environmental determinants

Scaling up

#	Steps	Determinants	Path options
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	NA
13b	Continuously monitor and report on metrics/KPIs	NA	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	NA

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Variance in execution path steps for organizations by environmental determinants

Steady-state

#	Steps	Determinants	Path options
15	Enable various exposure mechanisms to create awareness – newsletters, online web portals, etc.	NA	NA
16	Institutionalize the governance model	NA	NA
17	Continuously monitor and report on metrics/KPIs	NA	NA

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Glossary of key terms used in this report (page 1 of 2)

Term	Definition
Artificial intelligence	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
BPM tools	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
BPO	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
Buyer	The company/entity that purchases outsourcing services from a provider of such services
Cognitive automation	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
Computer vision	A type of AI technology that aims to achieve automatic visual understanding through an image or a sequence of images
Deep learning	A subfield of machine learning concerned with algorithms and inspired by the structure and function of the brain called artificial neural networks
FTE-based pricing	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)
FTEs	Full-time equivalent is a unit that indicates the workload of an employed person
GIC	Global In-house Center is a shared service or delivery center owned and run by a parent organization
Horizontal business processes	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 & accounting, and human resource management
Machine learning	A type of artificial intelligence that provides computers with learning capabilities without explicit programming
NLP	Natural Language Processing is a cognitive intelligence-based methodology to interpret human languages
OCR	A technology that involves the recognition of printed characters and converting images into machine-encoded text

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Glossary of key terms used in this report (page 2 of 2)

Term	Definition
Offshoring	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
POC	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
RDA	RDA of attended RPAs that are deployed on user desktops; these are triggered by users instead of being orchestrated from a central control tower
Semi-structured data	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
Semi-structured documents	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.
Structured data	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
Transaction-based pricing	An output-based pricing structure priced per unit transaction with significant price differences between onshore and offshore
Unstructured data	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
Unstructured documents	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.
Vertical-specific business processes	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

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Additional references

The following documents are recommended for additional insight into the topic covered in this report. The recommended documents either provide additional details on the topic or complementary content that may be of interest

1. **Robotic Process Automation (RPA) – Technology Vendor Landscape with Products PEAK Matrix™ Assessment 2019** (EGR-2019-38-R-3217); 2019. Robotic Process Automation (RPA) is a key enabler of enterprise automation. This report uses Everest Group's proprietary PEAK Matrix™ to assess and evaluate RPA capabilities of independent software vendors across two key dimensions, market impact and vision & capability. It also includes competitive landscape & market share analysis, Everest Group's remarks on technology vendors highlighting their key strengths & areas of improvement, assessment of vendors' attended RPA / RDA capabilities, and insights into advances in RPA technologies
2. **Intelligent Document Processing (IDP) – Technology Vendor Landscape with Products PEAK Matrix™ Assessment 2019** (EGR-2019-38-R-3101); 2019. This report uses Everest Group's proprietary PEAK Matrix™ to assess and evaluate IDP software products of 16 technology vendors across two key dimensions – market impact as well as vision and capability. It also includes IDP competitive landscape, Everest Group's remarks on IDP technology vendors highlighting their key strengths and areas of improvement, and IDP product capability trends and predictions
3. **Smart RPA Playbook** (EGR-2018-38-R-2824). Smart RPA, which blends both RPA and AI capabilities, is a core competency that can successfully enable digital transformation for enterprises. Using a five-step approach to adopt, expand, and scale Smart RPA deployments, this Playbook taps various frameworks, such as Everest Group's Pinnacle Model™ and Capability Maturity Model (CMM), to empower enterprises to conceptualize where they want to go with enterprise automation, what capabilities they need to develop to get there, and the ideal path for their journeys

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About Everest Group

Everest Group is a consulting and research firm focused on strategic IT, business services, and sourcing. We are trusted advisors to senior executives of leading enterprises, providers, and investors. Our firm helps clients improve operational and financial performance through a hands-on process that supports them in making well-informed decisions that deliver high-impact results and achieve sustained value. Our insight and guidance empower clients to improve organizational efficiency, effectiveness, agility, and responsiveness. What sets Everest Group apart is the integration of deep sourcing knowledge, problem-solving skills and original research. Details and in-depth content are available at www.everestgrp.com.

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