

Move Beyond RPA to Deliver Hyperautomation

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Enterprise architecture and technology innovation leaders lack a defined strategy to scale automation with tactical and strategic goals. They must deliver end-to-end automation beyond RPA by combining complementary technologies to augment business processes. Gartner calls this “hyperautomation.”

Key Challenges

- EA and technology innovation leaders can create a myopic view of tactical routine automation over a long-term strategic roadmap. This risks their credibility within the organization.
- There is a lack of guidance helping organizations to assemble robotic process automation (RPA) with other tools. This hinders end-to-end process automation, causing these organizations to miss out on strategic business values.
- Initiatives to add AI-enabled intelligence to business processes are often delivered in silos without an integrated strategy. This results in future scaling challenges.

Recommendations

To accelerate business transformation, enterprise architecture and technology innovation leaders should:

- Plan a long-term strategic roadmap by aligning business goals, identifying processes to optimize and choosing complementary technologies.
- Build an integration strategy that enables end-to-end process automation by helping your organization to assemble RPA, business process management (BPM) and other tools from Gartner’s DigitalOps toolbox.
- Augment business processes by progressively integrating AI applications with DigitalOps tools to unlock long-term business value.

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Strategic Planning Assumption

By 2022, 65% of organizations that deployed robotic process automation will introduce artificial intelligence, including machine learning and natural language processing algorithms.

Introduction

Enterprise architecture (EA) and technology innovation leaders often get pressured by their business partners to focus on the tactical needs of routine process automation with RPA. RPA may provide quick relief as a noninvasive form of integration. However, processes are not always simple, routine, repetitive and stable. They may be long running, and they often involve intelligent automated decision making and optimization. The real challenge — to scale beyond the initial few low-hanging fruits of routine processes — cannot be solved by a single tool or with siloed strategies.

Hyperautomation refers to an effective combination of complementary sets of tools that can integrate functional and process silos to automate and augment business processes. Gartner has named hyperautomation among the top 10 strategic trends for 2020 (see “Top 10 Strategic Technology Trends for 2020”).

Hyperautomation can be enabled by DigitalOps — which is a business process framework designed to simplify, measure and manage processes across the enterprise (see “DigitalOps Helps Connect Business Models to the Digital Business Platform”). The DigitalOps toolbox offers a wide array of technologies beyond RPA, such as BPM, workflow engines, decision management suites, process mining, low-code application platforms (LCAPs) and others.

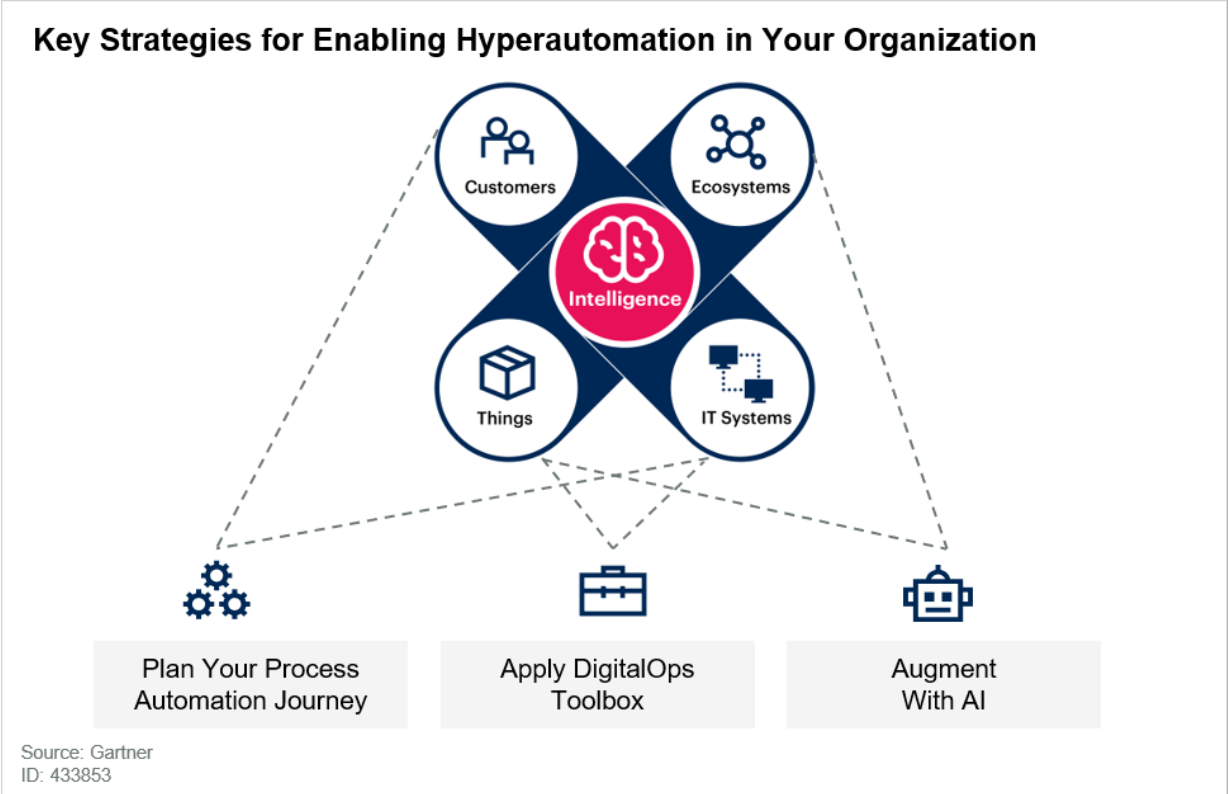
EA and technology innovation leaders are often challenged to create a strategy that can capitalize on DigitalOps competencies and tools. However, they often ask Gartner where to start.

This research will help EA and technology innovation leaders to:

- Define an automation journey.
- Co-create a strategy to combine DigitalOps tools.
- Augment business processes with AI.

Figure 1 outlines key strategies for enabling hyperautomation.

Figure 1. Key Strategies for Enabling Hyperautomation in Your Organization



Analysis

Plan Your Automation Journey

A roadmap is a very important first step. It is important to lay out the desired business outcome and the processes that need to be optimized, before automating and assembling tools from DigitalOps toolbox. Figure 2 illustrates three steps to build a roadmap for your automation journey.

Figure 2. Roadmap for Hyperautomation



Define the Desired Business Outcome

It is important to define your digital ambitions. Enterprise architects and business process owners must collaborate to set a vision for their digital business initiatives (see “Digital Business Ambition: Transform or Optimize?”).

Align your process automation goals to three key objectives:

- **Revenue** — What are your key drivers for revenue? For instance, you may choose to focus on enhancing processes, automating tasks, increasing customer engagement or introducing new services.
- **Costs** — Does it help to optimize cost? You could improve efficiency by automating tasks but also by redesigning processes, reducing the cost of errors and expediting processes.
- **Risks** — What are your compliance risks due to inefficient processes? By redesigning and automating processes, you could minimize the risk of noncompliance with a regulatory process.

Identify the use cases you wish to optimize in order to improve the efficacy and efficiency of a process. Aim to transform business processes by experimenting with new ways of delivering value. This can be done by redesigning and optimizing processes. In your roadmap, clearly distinguish your use cases and their outcomes associated to your revenue, cost and risk goals.

Optimize the Process

Quite often, automating a bad process can make it worse. It is essential to structure business processes for high performance. This is applicable when automation requires organizations to take a new view on key characteristics of processes related to data structure, component delineation and exceptions.

Identify use cases for optimizing processes by focusing on:

- Rightsizing your process IQ (see “Eight Dimensions of Process IQ Determine How Smart Your Process Needs to Be”).
- Industrializing and scaling the core processes that drive products and services delivered via a digital business platform (see “How to Industrialize and Reuse Core Product Capabilities and Processes With DigitalOps Initiatives”).
- Enhancing your process with structured and standardized data inputs, and decision intelligence.

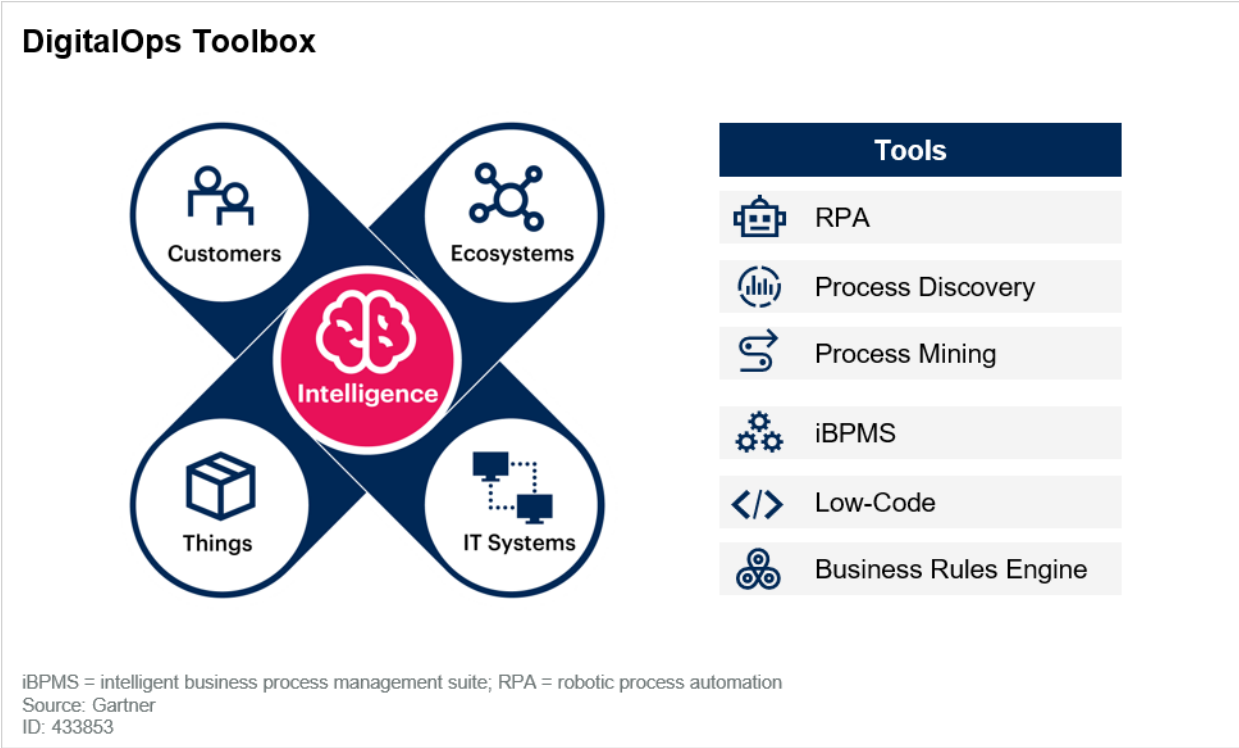
Plan to Apply DigitalOps Tools With Others Tools

Identify the DigitalOps tools that are closely aligned to your automation roadmap. Assess different technology markets and create a progressive investment plan to effectively deliver tactical and strategic business values.

Assemble DigitalOps Tools

A DigitalOps toolbox that is aligned to business-model-driven process automation comes with many options to address the different steps of process automation (discover, analyze, design, automate, measure, monitor and reassess). Inspect your use cases and your long-term business objectives to identify the optimal combinations of these tools (see “Navigate Optimal Routes for Process Automation With RPA, iBPMS and iPaaS”). The scope of this research is limited to some of the critical technologies within the DigitalOps Toolkit that are essential to intelligent business process automation objectives. However, this document does not cover all possible technologies — including iPaaS, APIs and enterprise service buses (ESBs) — that may be applied to enable end-to-end process automation. Figure 3 shows the tools comprising the DigitalOps toolbox.

Figure 3. The DigitalOps Toolbox



To assess and compare the individual capabilities of different process automation tools, see “Comparing Digital Process Automation Technologies Including RPA, BPM and Low-Code.”

BPM Platforms

Intelligent BPM suites (iBPMS) have a solid foundation of tools for orchestrating processes and automating tasks within those processes. iBPMS consolidate integration services, decision management, process orchestration, ad hoc processes and advanced analytics into a single platform.

If you have a BPM tool, you should focus on:

- Managing long-lived and cross-organization business processes that span people, machine services and things, as well as functional boundaries.
- Applying iBPMS as a master orchestrator of process and managing task lists.
- Triggering an RPA bot/script to automate a task within a process. You may use APIs to integrate the RPA scripts with your BPM master orchestrator.
- Monitoring metrics and creating analytics dashboards to identify opportunities to improve the process.
- Providing direct integration services/APIs to other enterprise platforms, applications and devices.

See “Magic Quadrant for Intelligent Business Process Management Suites” and “Critical Capabilities for Intelligent Business Process Management Suites.”

RPA

RPA is a noninvasive integration technology used to automate routine, repetitive and predictable tasks through orchestrated UI interactions that emulate human actions.

Use RPA to focus on the following:

- Delivering quick wins by automating routine and repetitive tasks.
- Creating API facades with legacy applications. Use the noninvasive means of RPA to interact with legacy applications where building traditional integration will be complex, time-consuming and expensive.
- Transporting, consolidating and validating data from disparate sources in a large-scale ERP migration project.
- Rapidly experimenting with a process prototype. Apply RPA to experiment rapidly and perform quick proofs of concept before launching a new service or process.

Low-Code Application Platforms

The graphical nature of LCAP development environments can be used for modeling rapid automation of a business process. Most LCAP vendors offer business process orchestration and workflow services to rapidly automate tasks and orchestrate them into simpler processes.

See “Magic Quadrant for Enterprise Low-Code Application Platforms” and “Critical Capabilities for Enterprise Low-Code Application Platforms.”

Apply LCAP as a complementary tool to focus on the following:

- Automating a process that is small in scope, or changes frequently and is constrained to a single business function or team. The ability to go rapidly from an idea to a deployed application

is core to LCAPs. This functionality puts LCAPs in a very strong position when automating business processes that need a high degree of flexibility.

- Creating or modernizing the user experience (UX) of a process requiring a web or mobile user interface. Many LCAPs are also multiexperience development platforms (see “Magic Quadrant for Multiexperience Development Platforms” and “Critical Capabilities for Multiexperience Development Platforms”).
- Exploiting the broad set of connectors to automate tasks related to applications that have existing APIs. However, the set of supported protocols is smaller than that of an integration platform or a BPM suite. The connectors in LCAPs primarily focus on HTTP REST API-based connectivity or connectors to common enterprise and SaaS (such as ERP systems).

Process Mining and Discovery/Analytics

Process mining is designed to discover, monitor and improve real processes by extracting knowledge from the event logs readily available in application systems (see “Market Guide for Process Mining”). Process mining includes automated process discovery, conformance checking and other advanced analytics features.

Apply process mining tools to:

- Identify process inefficiencies at a granular level.
- Discover, monitor and configure tasks that can be automated by bots/scripts.
- Extract knowledge from events readily available on a workstation or captured from screens.
- Create process documentation and autogeneration of simulation models.
- Repair or extend a model.
- Make process recommendations based on historical data.

You may integrate process mining tools with your BPM and RPA platforms to optimize routine automation opportunities by discovering, monitoring and analyzing business processes, tasks and interdependencies.

Decision Management Suites (DMSs)/Business Rules Management Systems (BRMSs)

DMSs are used to supplement conventional application development and runtime tools when a business application includes decisions that entail complicated or frequently changing logic. Modern DMS products have evolved beyond business rule management systems by providing better support for analytics and decision modeling. These can be used alongside BPM tools.

A DMS is relevant for decision-centric applications that involve any of the following:

- Diverse kinds of input data, which may be collected from multiple sources
- Multiple calculations

- Dozens, hundreds or thousands of business policies, implemented as rules
- Sophisticated algorithms that involve a mix of rules and analytics models
- Multiple stakeholders, sometimes with different objectives

If you already have a DMS platform, focus on the following:

- Building your decision model — for example, conceptual and logical models, such as those defined in DMN or similar decision modeling notations (see “Develop Good Decision Models to Succeed at Decision Management”).
- Improving the decision authoring or maintenance tools — for example, through decision metaphors that make it easier for the business to author or modify rules and analytics without help from IT.
- Supporting predictive analytics scoring services — such as the capability to import or connect with PMML, PFA, R, Python or other models from data science platforms (or similar advanced analytics tools).

See “Innovation Tech Insight for Decision Management.”

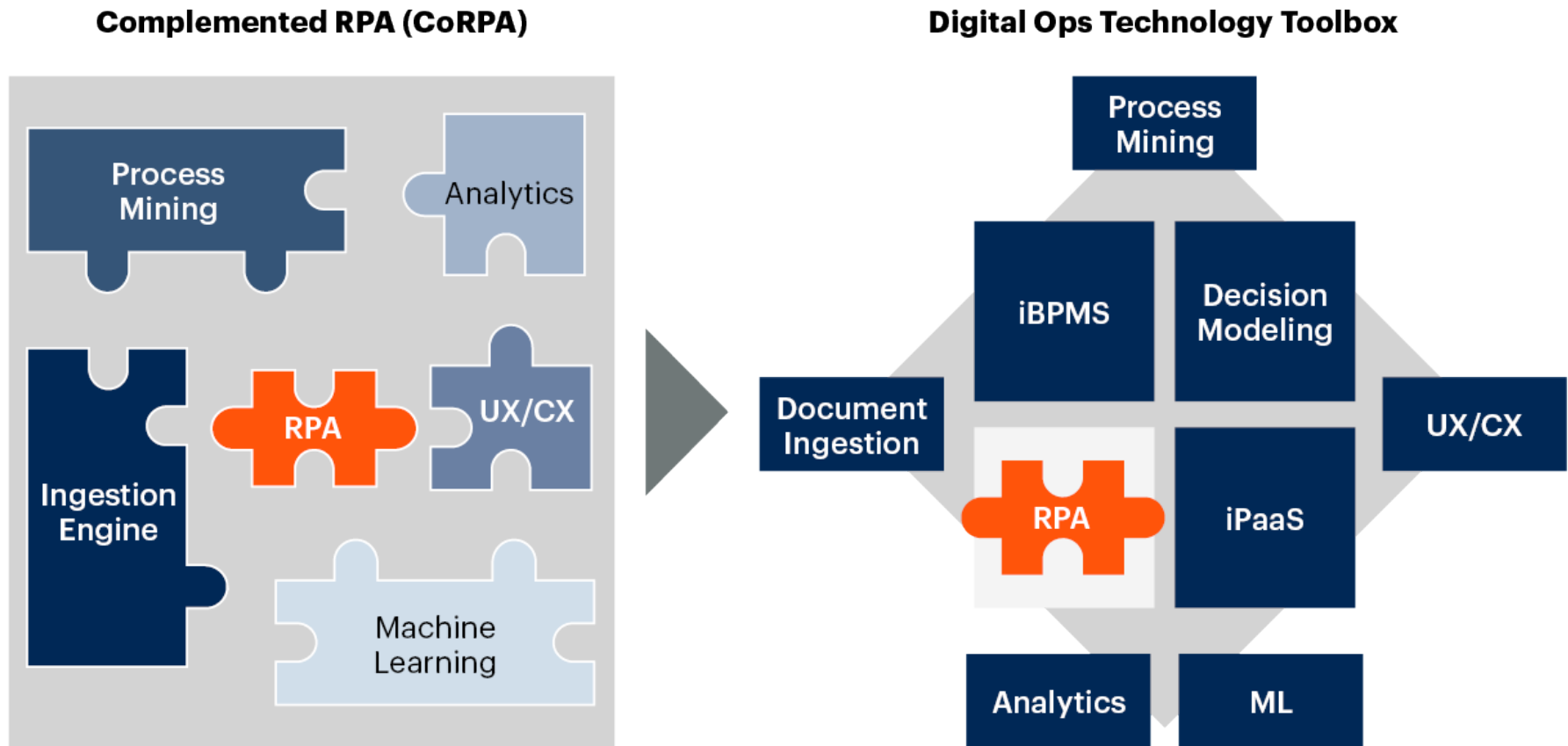
EA and technology innovation leaders should look to transition from a loosely coupled RPA ecosystem with complementary technologies, to a more-connected DigitalOps toolbox. From 2020 onwards, many vendors will provide a single platform with an integrated offering. For instance:

- Microsoft have launched Power Automate RPA solution with their Power Apps low-code and workflow applications.
- SAP launched its integrated BPM RPA offering from its enterprise cloud, integrated with S/4HANA ERP.
- Pegasystems already provides an integrated BPM RPA solution.
- Appian have partnered with UiPath, Automation Anywhere and Blue Prism.
- Oracle have partnered with several RPA vendors.

Figure 4 illustrates the transition to the DigitalOps toolbox.

Figure 4. Evolution From Task-Based to Complemented RPA to DigitalOps Toolbox

Evolution From Task-Based to Complemented RPA (CoRPA) to Digital Ops Toolbox



Source: Gartner

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Augment Business Processes With AI

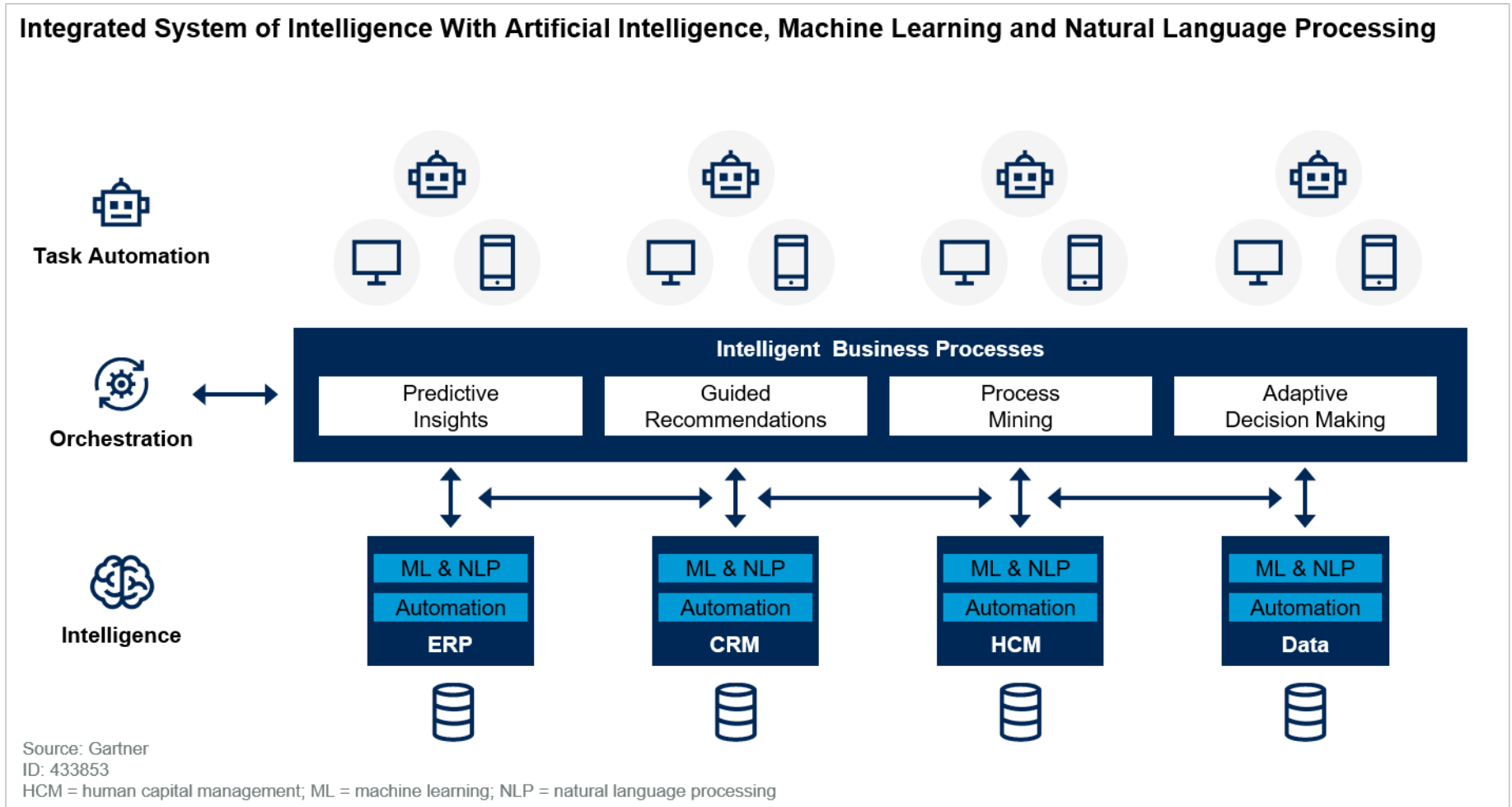
To accelerate hyperautomation, an integrated system of intelligence effectively combines DigitalOps tools with:

- Artificial intelligence (AI)
- Machine learning (ML)
- Natural language processing (NLP)
- Optical character recognition (OCR)
- Conversational chatbots

See “A Framework for Applying AI in the Enterprise.”

Figure 5 illustrates an integrated system of intelligence with AI, ML and NLP.

Figure 5. Integrated System of Intelligence With AI, ML and NLP



In an integrated ecosystem of DigitalOps tools:

- RPA enables task automation.
- BPM/LCAP/DMS enables dynamic orchestration/choreography.
- The AI layer adds to the intelligence.

Existing transactional ERP and customer-focused platforms incorporate their own local, process-centric tooling. AI can be applied at each layer of application integration to facilitate predictive insights and enable guided recommendations, process mining and adaptive decision making. A business process touching many applications and systems can effectively use AI, ML and NLP models to achieve the same thing.

See “5 Steps to Get Started With Machine Learning.”

AI and ML are used specifically for process automation scenarios to:

- Perform continuous learning with data collected in automation processes to update models dynamically — which improves the quality of automation — and make the necessary adjustments.
- Reuse learning models (that is, models trained for other customers for similar use cases and then repurposed into a new customer’s model). This minimizes the time and data required to build and deploy a model. Look for vendors who provide this feature.
- Secure model privacy, ensuring that any client information used to train the model is abstracted from the reused learning models.
- Automate the training and building of ML models without requiring the manual process of training and selecting ML algorithms.

See “A Guidance Framework for Operationalizing Machine Learning for AI” and “How to Build Momentum for Machine Learning (ML) Initiatives (Iron Mountain).”

Common use cases of AI, ML and NLP within business process automation include many industry-specific instances, such as:

- Claims handling in insurance (e.g., extraction, classification of claims data)
- Anti-money-laundering efforts in banking (e.g., reconciliation, monitoring of transaction data)
- Product data matching in retail

There are many more examples of AI augmentation in:

- Case management
- Contract management
- Legal processes
- Clinical trials and pharma co-vigilance in healthcare

- Automated help desk triage and resolution

To realize business value, you must deploy AI technologies that deliver specific, measurable business outcomes for targeted use cases. Collectively develop candidate use cases of AI and ML, while identifying the quantifiable business outcomes from each of these use cases. Agree on measurable business impacts before gathering the first set of data and beginning the journey to build the framework.

Find out how the integrated AI functions within the automated process will work with other components. AI and ML approaches have very low explainability. If you need to be able to justify your decisions within a process, then using AI and ML may not be a good approach — or you may need to implement some kind of human oversight.

For example, if you are automating an anti-money-laundering process and implementing a fraud detection algorithm, you may need to understand the interfaces between your AI components and other automation tools. Many of these processes involve nonroutine tasks, decision intelligence and human judgment.

In this example, the process would involve the following steps:

1. An intelligent business process management suite and/or distribution management system tool manages the decision-driven workflow/orchestration of the process.
2. It triggers an RPA bot/script to perform some data collection and other routine labor work to validate customer records, etc.
3. The fraud detection algorithm — built on an ML model — is run on the consolidated data to identify patterns. This process could introduce human intervention, requiring that formal approval or e-signature be provided in order to move forward.
4. This then triggers another RPA bot to perform follow-up actions, such as sending emails and updating transactional systems (such as the ERP solution, CRM solution and other applications).

Similarly, for a contact center operation:

1. An NLP text analytics feature could be used to perform customer sentiment analysis based on call transcripts of customer complaints.
2. This could be used to identify next best steps or even prepare the contact center agent to drive a value-added conversation.
3. An attended RPA bot could perform follow-up actions/tasks for the agent — such as preparing a structured email with valuable data.

Recommendations for enterprise architecture and technology innovation leaders who are augmenting business processes with AI, ML and NLP:

- Identify use cases for optimal application of each AI area — including ML, NLP, OCR and chatbots.

- Assess the required resource skill sets, time, costs and complexity involved in building AI models to justify the business case.
- Ensure availability of good quality historical data to train the ML models.
- Assess all factors, including actors, trigger points, subsystem boundaries, interfacing APIs, exception handling and edge cases where human interventions are required.
- Plan for small, fast, iterative AI wins in business operations.
- Exploit AI accelerators from the major cloud service providers (CSPs) that might be included within your LCAP, DMS, BPM, RPA and iPaaS platforms. Common AI/ML libraries often available within these platforms include AWS Machine Learning, Google Cloud (TensorFlow), IBM Watson Studio, Microsoft Azure Machine Learning Studio, StanfordNLP, Natural Language Toolkit, and spaCy.
- Look for AutoML features to enable RPA processes to capitalize on ML and NLP accelerators. AutoML engines use input and output of data from completed manual tasks to pick algorithms, train the models and insert models into the automation in a nondisruptive fashion.

Acronym Key and Glossary Terms

AI	artificial intelligence
BPM	business process management
EA	enterprise architects
DMS	decision management suites
iBPMS	intelligent business process management suites
iPaaS	integration platform as a service
LCAP	low-code application platforms
ML	machine learning
NLP	natural language processing
OCR	optical character recognition
RPA	robotic process automation
SaaS	software as a service

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

“Navigate Optimal Routes for Process Automation With RPA, iBPMS and iPaaS”

“Optimize RPA Governance to Scale Process Automation”

“A Framework for Applying AI in the Enterprise”

“Digital Customer Service Part 3 — Update Process Mastery by Selectively Introducing RPA, Chatbots and AI”

“Laying the Foundation for Artificial Intelligence and Machine Learning: A Gartner Trend Insight Report”

“Differentiate RPA Products via Process Mining and Robotic Process Discovery”

“Best Practices for RPA, Machine Learning and Data Visualization Experimentation”

“Comparing Digital Process Automation Technologies Including RPA, BPM and Low-Code”

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