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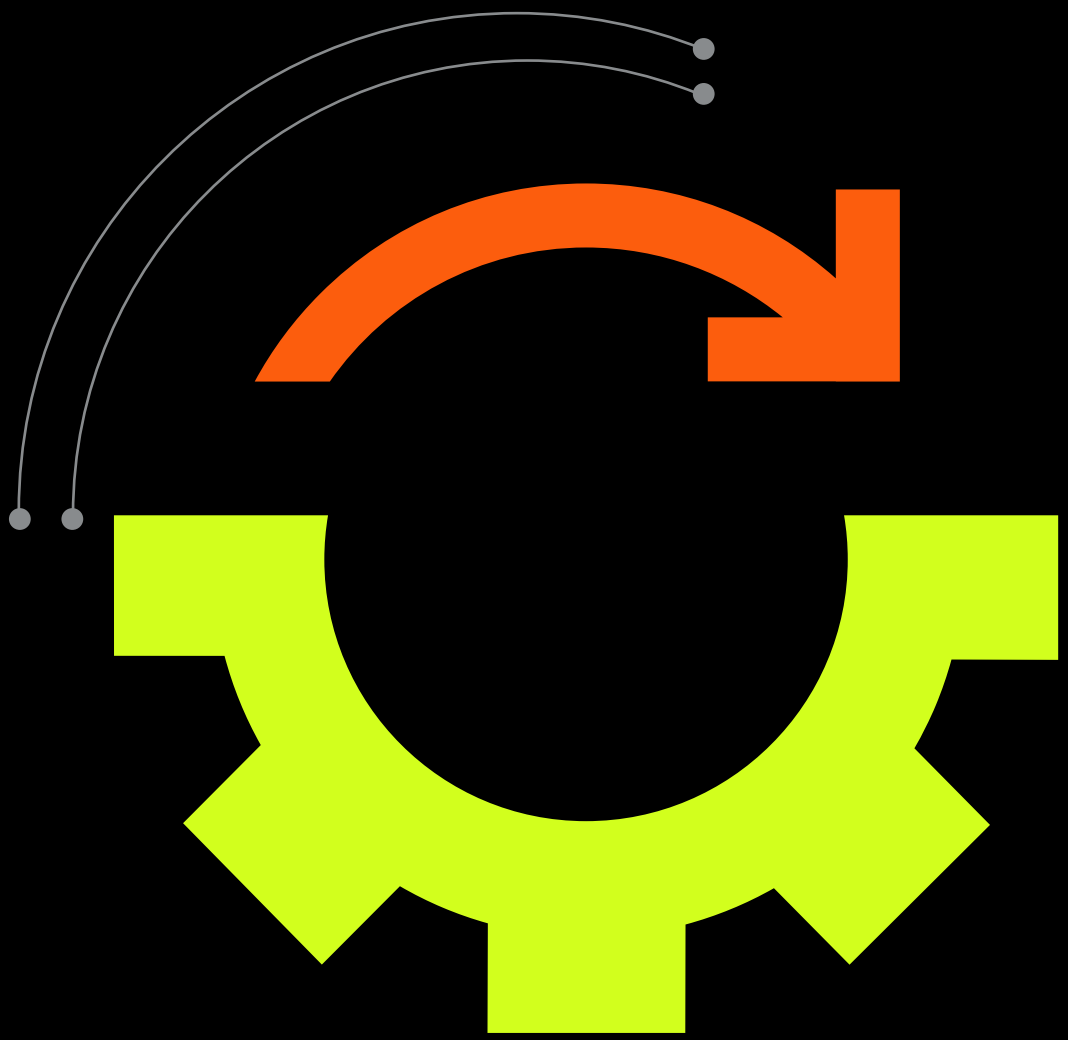
A Buyer's Guide to End-to-End Process Orchestration



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Contents

Introduction: Why is end-to-end process orchestration so important?

In the last five years, digital transformation has accelerated faster than anyone could have predicted. Teams have added new technology systems and processes to their mix at an unprecedented rate. In fact, software spending in this time period outpaced the general inflation rate by 4x. Among enterprises with 1000+ employees specifically, SaaS spending increased by 33% in just two years between 2020 and 2022.

Why does that matter in the context of automation? Many organizations have invested in automation point solutions or technologies that play a dedicated role within an automated process. Point solutions help to automate tasks, as all processes are made up of tasks. While point solutions are great for automating individual tasks, they cannot orchestrate and execute a fully end-to-end process. For example, an RPA bot may be used to control a simple task, such as porting over information from scanned documents into a CRM. However, RPA is not effective for managing more complex automated processes.

Other organizations may have invested in orchestration-adjacent technology platforms like RPA, iPaaS, or LCAP that have automation capabilities and are now making bold claims about orchestrating processes. However, these technologies have limited capabilities for advanced use cases, so they may only succeed with a subset of processes, leaving business-critical ones uncovered.

Both types of investments — point solutions and platforms — create automation silos. Silos, by nature, are focused on a single task rather than an end-to-end process. As such, using siloed automation technology can lead to broken or inefficient end-to-end processes, which stand in the way of reaching important internal and external business goals for automation. For example, a broken process might cause an insurance company's customer to experience wait times for claims processing that exceed industry standards. As a result, the customer might churn and seek coverage from a competitor.

Automating with intelligence

According to Deloitte, 92% of implementers and scalers are either already implementing end-to-end automation as part of their intelligent automation strategy (44%) or are planning to implement it in the next three years (48%).

Automation silos also indicate that you may not be thinking about automation strategically. If you're automating on a task-by-task or project-by-project basis, you ultimately may be missing critical connections between your digital transformation investments.

Many organizations have complex processes that involve various systems. According to the State of Process Orchestration Report 2024, 60% of IT decision-makers and business leaders estimate that 26 or more systems are involved in their organization's automation implementation. These organizations often contend with legacy systems, AI tools, other automation tools, microservices, and tasks that must be done by knowledge workers. Disparate systems and human tasks need to be integrated when automating their business processes.

Sometimes the processes themselves need to follow an advanced logic. For example, multiple steps might need to be executed in parallel, or a process might require escalation after a certain amount of time. Many teams may have technologies in place that cannot support complex processes, leading to unnecessary workarounds and technical debt. Or, they may not have complete visibility into their processes' performance at all.

To address these challenges, you need to properly orchestrate processes from end to end. The objective is to prevent automation silos. A strategic orchestration approach helps your organization achieve uninterrupted and frictionless automation, even when dealing with the most intricate processes.

In this buyer's guide, we'll:

- Review the differences between local automation point solutions, megavendors, automation platform providers, and end-to-end process orchestration
- Discuss what to look for when selecting process orchestration technology and why
- Cover key questions to ask in your vendor evaluation process

Point solutions in the hyperautomation tech stack

Many organizations are pursuing hyperautomation, which Gartner defines as "a business-driven, disciplined approach that organizations use to rapidly identify, vet, and automate as many business and IT processes as possible." Hyperautomation is a critical consideration for organizations looking to improve their operations and stay competitive.

Using advanced technologies, organizations can automate many of their manual processes and tasks, leading to improved efficiency, cost savings, and better business outcomes. However, there's one important caveat: Hyperautomation involves the orchestrated use of multiple technologies, tools, or platforms. In other words, process orchestration is a vital step toward hyperautomation maturity.

Types of tools in a hyperautomation tech stack

To meet your hyperautomation goals, you will need a combination of tools to form your tech stack. Most tools have basic built-in process orchestration capabilities, yet these capabilities are not enough to achieve end-to-end process orchestration and break down silos. (We'll cover more on that topic later.)

Here are some of the most common tools teams consider:

- **Application integration tools**: Tools such as Zapier, IFTTT, Tray.io, and Make (formerly Integromat) can execute actions as events happen — for example, inserting new data into Airtable when a Trello card is completed. Some of these tools extend beyond the boundary of task automation, also providing basic process automation capabilities (e.g., Tray.io).

- **Integration platform as a service (iPaaS) tools**: Cloud-based platforms such as Mulesoft and Boomi allow integration on a point-to-point basis. They provide pre-built connectors, data mapping, and transformation capabilities combined with basic workflow capabilities. However, they typically don't consider the end-to-end process.

- **Technical task automation frameworks**: Frameworks including Apache Camel simplify developer involvement in certain tasks, such as communication with the filesystem, messaging middleware, and other interface technologies. Batch processing also fits into this category. For example, teams may use batch processing as a way to automate tasks that apply to every row in a dataset.

- **RPA**: Robotic process automation is often confused with process orchestration, especially as RPA vendors shift their messaging to align with market trends. However, RPA is about task automation, such as automating the execution of a single task in an application that does not provide a proper API. As such, RPA can be combined with process orchestration. The orchestrator will coordinate the overall process and delegate to RPA for specific tasks. This design also allows teams to evolve solutions from manual work, to RPA-based automation, to true API-led integration.

- **LCAP**: Low code application platforms, such as OutSystems and Mendix, often contain workflow engines with limited capabilities. While teams can use these technologies to create applications, they often do not support advanced automation use cases or BPMN process modeling frameworks. As such, your development team may have to pursue complex workarounds.

- **BPA**: Traditional business process automation tools, such as Appian and Pega, are often monolithic systems, which are closed off to outside integrations and operate as black boxes. They are often built on legacy technologies that are not cloud-native, which limits growth. In addition, many use proprietary languages and frameworks, which require specialty skills that are difficult to recruit for and expensive to maintain — leading to longer time to market.

- **Megavendors**: Larger "suites" such as ServiceNow, Salesforce, and Microsoft claim they can do everything, and aim to lock customers into their platform. Yet, they are often monoliths that do not have sophisticated workflow engines. While these vendors offer automation solutions, they may only cover a percentage of use cases, leaving the most complex and business-critical use cases uncovered. Developers often need to implement extensive custom code to make advanced automation use cases work within the platform.

Using point solutions for end-to-end orchestration

Challenges

- Broken end-to-end automation: Isolated processes are not integrated with one another, and the end-to-end process is not fully automated.
- Lack of understanding: The end-to-end process is not fully visible, making key metrics hard to track and improve.
- Lack of flexibility: Changing the end-to-end process is difficult because it requires changes to many different systems.

Business Impacts

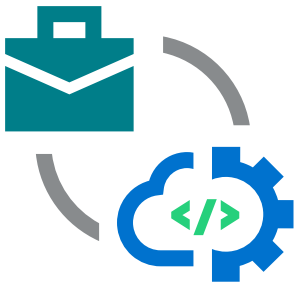
- Inefficient processes and slow response times impact the satisfaction of both customers and employees.
- Legacy infrastructure drives up maintenance costs and makes it more difficult to adapt to new technologies.
- Additional personnel are required for what should be an automated process, resulting in unnecessary expenses.

Many organizations may already have adopted a variety of point solutions within the hyperautomation tech stack. Each of these tools solves a unique task-based automation problem, such as automating data entry with RPA, so the organization may experience quick wins. Yet, these same teams experience a value trap over time because their RPA bot architecture or other point solutions are disjointed and task-based. Point solutions limit their ability to scale and achieve the automation outcomes they desire, all the while compounding technical debt.

Critical success factors for true end-to-end orchestration

Given the many challenges of automation silos, how do you know if your vendor is able to provide true, end-to-end process orchestration? Without the right knowledge, you could end up with yet another point solution or limited process coverage. Here are the top three critical success factors for any process orchestration technology, along with some qualifying questions you can ask during your evaluation process.

Critical success factor #1: Align business and IT with BPMN and DMN



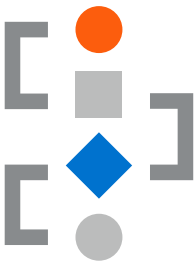
What it is: The BPMN and DMN standards help teams model and execute business processes and automated decisions. These standards provide a common language that aligns IT and business professionals. BPMN flowcharts and DMN tables are easy to read, directly executable by process orchestration platforms, and help all stakeholders gain a shared understanding of how their processes work from start to finish.

Why it's important: Aligning on common standards allows teams to collaborate and communicate more effectively. A mutual understanding of BPMN can ensure that the automated process being built meets business requirements. This alignment not only reduces effort along the way (and in the future), but also helps the process achieve the desired business goals.

Key questions to ask:

- Does your process orchestration solution have native support for the BPMN and DMN modeling standards?
- How do you design and deploy process models and decision tables in the same user interface?
- How do you share BPMN models and DMN tables with other business stakeholders to improve visibility and foster collaboration?
- Does your solution provide process-focused analytics and intelligence? Showing analytics on the process model helps to further foster a common understanding of the process amongst stakeholders. The tool should provide actionable insights based on real-time and historical process data and features that help you optimize your processes.
- How do you test processes without the risk of testing in production? For example, can you use automated regression testing?
- How do you integrate with our existing CI/CD pipeline/process?

Critical success factor #2: Tame process complexity with advanced workflow patterns



What is it: Life is seldom a straight line, and the same is true of processes. Most advanced workflow patterns involve reacting to events or handling complex business process logic across multiple endpoints. Some examples include:

- **Compensation**: Rolling back a business transaction in case of problems, or restoring business consistency.
- **Dynamic parallel execution**: Dynamically coordinating multiple process branches at the same time.
- **Message correlation**: Correlating events together in a sequence (such as correlating a customer's unique identifier with an order number on a customer service call).
- **Time-based escalation**: Escalating processes that aren't completed within a specific window of time.

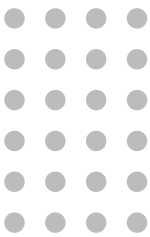
Why it's important: While basic workflow patterns might be sufficient for local task automation or simple integration flows, most processes are not that simple. You must be able to accurately express all the things happening in your business processes for proper end-to-end process orchestration. This requires workflow patterns that go beyond basic control flow patterns (like sequences or conditions).

If your orchestration tool does not provide those advanced workflow patterns, your developers will need to implement time-consuming workarounds — resulting in diminished process visibility, longer, more expensive maintenance cycles, and a lapse in collaboration between business and IT.

Many software products claim that they support end-to-end process automation, whether they focus on RPA, iPaaS, or microservices orchestration. However, the process logic they implement is typically reduced to basic workflow patterns, such as steps in a sequence or branches for if/then-based processes.

Key questions to ask:

- Does the process orchestration solution support advanced workflow patterns?
- Does it support compensation, including compensation events in BPMN?
- Does it support event / message correlation, including matching incoming events or messages to waiting / persisted process instances?



Top drivers of process complexity

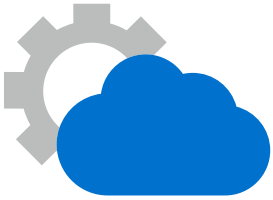
According to the State of Process Orchestration Report 2024, 51% of teams see an increase in complexity due to processes spanning multiple systems, up from 45% in 2023.

Top drivers of process complexity include:

- The **number and nature of systems, applications, or people** involved in the process. For systems and applications, their own complexity and ease of integration is especially important.
- The **number and complexity of activities** involved in the process, and the **control structures** required (e.g., the number of branching points, errors, or exceptions that need to be handled, or the need for advanced constructs like event handling or compensation).
- The **amount and nature of data** handled in the process. This can range from simple text fields to complex documents.
- The **number of developers** required to work on a project.
- The **number of departments** or people involved in discussing how a process is implemented.
- The **number of users** that do operational work as part of the process instances, e.g. via human tasks.
- **Compliance or regulatory requirements**. For example, financial processes often need to comply with many legal requirements. Auditors might not only ask about how processes are implemented in general, but also want to look at audit logs to understand what has happened in certain situations.

- Can it support different types of endpoints in end-to-end processes? The tool should be able to orchestrate every human and automated task in a business process across components such as systems, APIs, microservices, RPA bots, IoT devices, and AI/ML tools. Look for out-of-the-box connectors to easily implement different endpoints.
- How do you manage long-running business processes that run for hours, days, or even weeks? Look for effective state persistence (ideally, event-streamed state persistence to avoid database bottlenecks), querying possibilities, and monitoring abilities.
- How do you modify the state of persisted process instances (for example, moving to a different step, updating to a new version of a process definition, triggering retries, canceling, suspending/resuming, etc.)?
- How do you generate an audit or event log that allows following the execution path of each process instance?
- How do you assign a task to a human, wait for them to complete the task, and then continue with additional actions?

Critical success factor #3: Automate reliably, at scale with a cloud-native flexible architecture



What is it: To automate reliably and at scale, process orchestration solutions need a flexible and scalable architecture. Teams should prioritize not only cloud-native architectures but also systems that take advantage of distributed architectures and event stream processing to provide massive scale and resilience. An advanced workflow engine with a distributed architecture is also ideal for delivering high availability because the software doesn't rely on a single workflow node or a central database.

Why it's important: It's critical to have a platform that supports whatever your business requires. A purely elastic workflow engine will allow you to apply process orchestration to a wide variety of processes, including core processes running huge loads (like payments or trade processing).

Find a process orchestration solution that enables your team to choose which parts to use and where, integrates seamlessly with other IT tools, and offers on-premise, cloud, and hybrid deployment options. It should be developer-friendly, be built to align with modern cloud engineering practices, and support cloud-first process automation initiatives that can scale horizontally.

Key questions to ask

- Does the process orchestration solution consist of flexible components that can be composed into a solution that fits your technical and business needs?
- Does the solution have an architecture that supports open API integrations?
- Does the vendor offer built-in integrations or connectors for popular tools and technologies? Do they provide an SDK so you can extend built-in connectors and develop your own?
- How do you make changes or modify process instances without interrupting the workflow?
- How do you upgrade your workflow engine without interrupting running process instances?
- Are there proper developer support resources in place (e.g. powerful SDKs; getting started guides; online communities; or easy-to-find support on Google, Stack Overflow, or AI-powered copilot utilities)?
- Are you locked into a low-code layer, or can your professional software developers deploy custom code using their preferred programming languages when needed?
- Does your tool deliver high availability through a distributed architecture to support scaling and handling increasing load? Do you support geo-redundancy?

Conclusion: Using process orchestration to drive business value

To wrap up, this eBook provides some important considerations as you evaluate the performance of your hyperautomation tech stack. It's important to understand if your existing tools are holding you back from making changes, gaining visibility into how well your processes are working, and ultimately scaling your end-to-end automation efforts. By adopting process orchestration, you'll see seamless orchestration across people, systems, and devices, maximizing the value from existing investments and reducing technical debt.

With the right solution, both business and IT stakeholders can design, innovate, and execute together with better visibility so you can see where, when, and how everything is happening. Perhaps best of all, you'll be able to move faster, anticipating and adapting to customer needs.

With Camunda, enterprise organizations can drive lasting value, transformative efficiencies, and unparalleled visibility through end-to-end process orchestration. According to a new Forrester TEI report, Camunda customers experience a reported savings of $15 million in process quality improvements and over 20,000 hours of development time.

Discover how Camunda can work in your business

Book a demo

About Camunda

Camunda enables organizations to orchestrate processes across people, systems, and devices to continuously overcome complexity and increase efficiency. A common visual language enables seamless collaboration between business and IT teams to design, automate, and improve end-to-end processes with the required speed, scale, and resilience to remain competitive. Hundreds of enterprises such as Atlassian, ING, and Vodafone orchestrate business-critical processes with Camunda to accelerate digital transformation. To learn more visit **camunda.com**.