



**WHITE PAPER**

# Using Intelligent Automation to Create a Healthier Life Sciences Supply Chain

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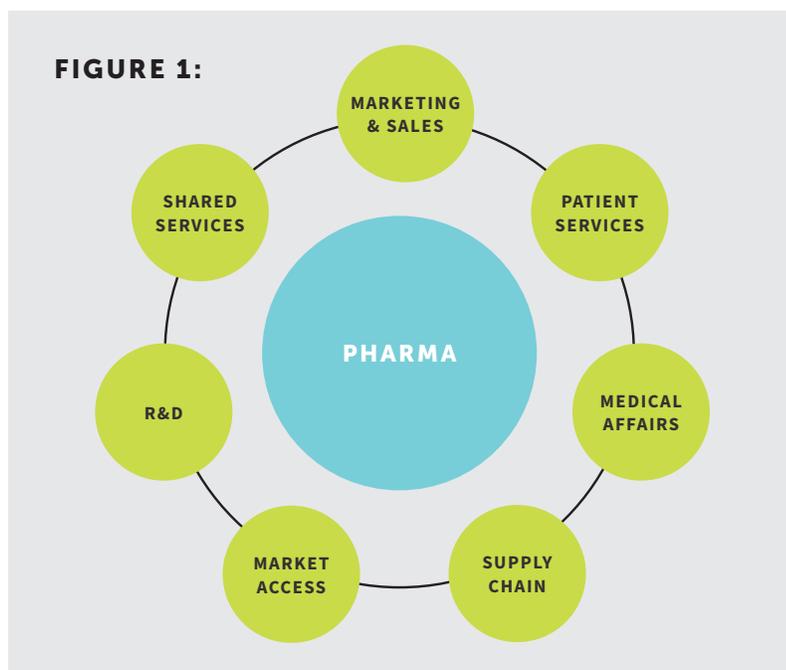
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# Regulation & Innovation are Driving Supply Chain Automation in Life Sciences

*The pharmaceutical industry has grown rapidly over the last decade due to an aging population in developed countries and the ongoing expansion into emerging markets, including parts of Africa, Asia and Latin America. The IFPMA predicts this trend to continue, with the 2016 global market cap of \$1.1 trillion for pharma companies growing to \$1.485 trillion by 2021.<sup>1</sup>*

Today's top drug makers driving this growth are huge conglomerates, made up of divisions, facilities and research arms located across multiple geographic regions. New global regulations warrant complex solutions, slowing change in the industry. For example, in the US, the FDA's Drug Supply Chain Security Act calls for the pharma supply chain to create an "electronic, interoperable system to identify and trace certain specific drugs as they are distributed in the United States"<sup>2</sup>—with compliance expected to be completed by 2023.

Pharma organizations should not see regulation as a threat if it provides the opportunity to improve the value chain via technological innovation. A value chain analysis examines the whole value system in which the pharma industry operates. The primary activities of a global pharma company can be grouped into the areas detailed in Figure 1:



Each of these areas is linked to support activities meant to improve effectiveness, efficiency and competitiveness. Particularly for the supply chain, emerging technologies like robotic process automation (RPA), intelligent automation (IA) and machine learning (ML) present opportunities to meet new regulatory standards while also maximizing profitability unlocking operational efficiencies and automating manual work to increase accuracy. What follows is a breakdown of how a life sciences organization might implement these technologies to achieve supply chain automation.

<sup>1</sup> <https://www.ifpma.org/wp-content/uploads/2017/02/IFPMA-Facts-And-Figures-2017.pdf>

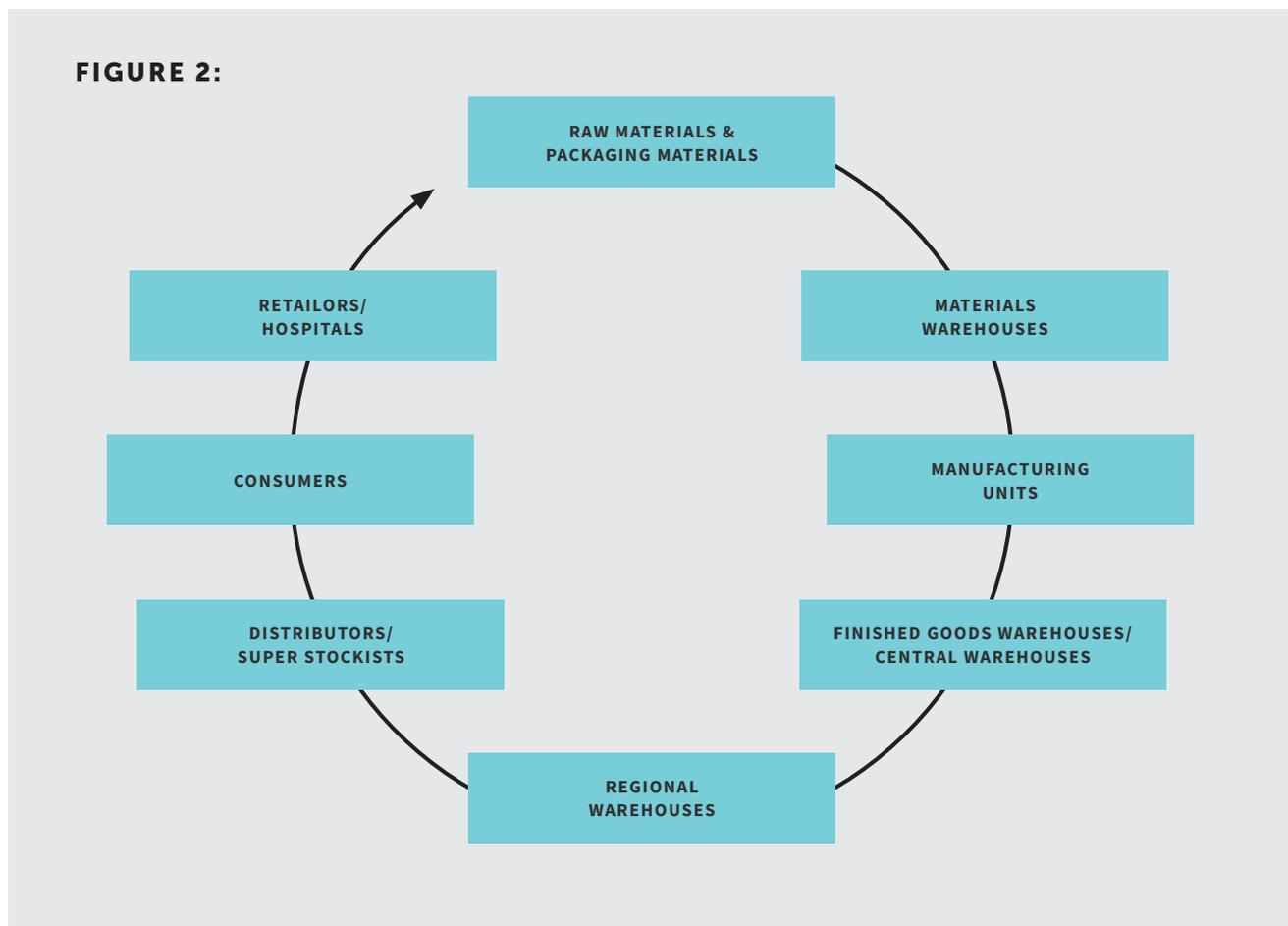
<sup>2</sup> <https://www.fda.gov/downloads/Drugs/DrugSafety/DrugIntegrityandSupplyChainSecurity/DrugSupplyChainSecurityAct/UCM464907.pdf>

# The Life Sciences Supply Chain Brings Complex Challenges

*In order to keep pace with the highly competitive landscape, pharma companies are looking to become more effective with spending in various areas of the value chain.*

As noted above, the FDA's Drug Supply Chain Security Act is forcing pharma companies to increase traceability of certain drugs by 2023, which brings the supply chain into focus. Enabling new capabilities through intelligent automation for supply chain in life sciences becomes a very attractive idea for IT investment, as other industries have already shown success in enabling intelligent automation to get value from automating the supply chain process.

The supply chain of the pharma industry is like that of any other industry in the manufacturing sector. An analysis of the industry's supply chain components includes:



## The Life Sciences Supply Chain Brings Complex Challenges *(con't)*

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The complexity of the manufacturing and distribution process introduces information management and process continuity issues. A disruption in the supply chain can result in a negative impact on the timely supply of materials from manufacturing plants to the patient as well as significant financial impacts regarding cash flow. Common issues that disrupt the supply chain can impact other revenue-generating activities such as invoice processing, new product indications or dose formulations, supplier management & collaboration and customer service & order management. Visibility of the supply chain in terms of products and available capital is critical to supply chain management.

Supply chains, although automated to a degree, still face challenges brought about by the amount of required manual tasks and the daily management of complex interdependent parts. The next generation of process efficiency gains and visibility makes intelligent automation the obvious and practical solution to address the challenges facing the supply chain ecosystem.



# Proof Points for Pharma: Invoice Processing Automation in Other Industries

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*Before getting too deep into the topic as it pertains to life sciences, let's set the stage with some examples of supply chain automation success in other industries. Within the oil & gas (O&G) industry, for example, functional areas such as finance have initiated their automation journey with an invoice processing focus.*

A common time-consuming process is invoice data ingestion. Most global O&G companies contract out to numerous small businesses in various countries. Some small businesses do not have the ability to send an invoice in electronic data interchange (EDI) format. Instead, many of these companies will fax or mail their invoices to a central accounts payable department. As the invoice formats come from various vendors, they are not standardized and sometimes in different languages. However, the key information needed from each invoice is finite, presenting an opportunity to automate data ingestion. As such, utilizing intelligent automation techniques has already established solutions for ingesting the paper invoices from non-EDI partners to save time, reduce errors, and strengthen the supplier/vendor relationship.

## **Here are some examples of real-world results from EPAM clients to showcase the value of invoice processing automation:**

- After automating 80% of the invoice processing from paper invoices through IA, the consumer division of a large multinational financial services company achieved 99% accuracy of invoice processing and 55% of FTE reduction. The process was fully compliant
- A large American bank automated data entry for daily balances and account activities in PeopleSoft with IA, resulting in 58% increased efficiency for booking operations and 98% of renewals automated with 99% accuracy. All manual steps and interim excel workbooks were eliminated
- At a leading global O&G organization, the automation of invoice data entry into SAP systems provided traceability, reporting and monitoring for the end-to-end process and resulted in a time reduction from 23 minutes to 1 minute. Peak time volume processing did not require additional FTE – bots were added and scheduled to run 24x7 for increased throughput

With the pharma supply chain defined and these examples in mind, let's explore the various potential applications and use cases for IA and RPA in life sciences.

# Intelligent Automation Applicability: Use Cases for Pharma

*Intelligent automation is defined as enhanced robotic process automation. In addition to the perfunctory human tasks of click, copy, paste, enter and email across various computer screens and applications, IA can enhance workflows via rule-based solutions.*

The enhanced capabilities of RPA can include the ability to read documents and perform comprehension. With the implementation of a full suite of advanced capabilities such as machine learning algorithms, sophisticated systems have demonstrated the ability to perform pre-emptive tasks and predict the next action, creating an optimized workforce at a fraction of the cost.

Capabilities of IA include RPA, outcome-based ML, cognitive document processing (ML-enhanced optical character recognition), conversation agents (chatbots) and AI for business-centric solutions. To put the capabilities in perspective, here are some high-level use cases that can benefit from IA as it applies to the full-circle life sciences value chain:



# Cognitive Document Processing in the Supply Chain

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*A common activity for life sciences companies that requires a lot of manual work and data entry is enterprise document management (EDM). Manufacturing processes require that numerous regulatory documents are collected at different stages of the supply chain.*

Many of these documents are generated externally to the enterprise and cannot be controlled by the enterprise resource planning (ERP) ecosystem unless the suppliers and manufacturers are integrated partners exchanging information via EDI. Few global pharma companies allow such integration with external vendors/suppliers due to the fluctuating costs of security, implementation, upgrades and/or maintenance of these highly integrated systems.

The EDM process can be automated through ML-assisted document classification and OCR with intelligent word recognition to extract information from documentation that can be translated into key-value pairs and create a capability called cognitive document processing. When linked with the use of RPA, a company can post the information into specific applications and portals, saving significant cost and providing real-time updates.

The tasks once outsourced to inexpensive labor (e.g. memorizing rules to extract information from documents to be typed into a computer form) can now be brought inside the enterprise with the document automation of tasks around supplier/vendor registration, reimbursements/credits to customers, bills of lading, purchase orders, invoices, payments and regulatory documentation.

# Using RPA to Increase Supply Chain Visibility

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*Information management across the supply chain is a key area of concern for life sciences organizations. The worldwide big data market is projected to grow from \$35B in 2017 to \$103B in 2027.<sup>3</sup> This market expansion will include data warehouses, data lakes, master data, extract, transform, load (ETL) and business intelligence tools to get real-time information about what's happening across the supply chain.*

The root cause of linking multiple systems is the need for information exchange. With information consistently being updated throughout the manufacturing and distribution processes, providing visibility into that change presents a challenge. In a supply chain, the product starts as a raw material and is transformed/packaged into a final active pharma ingredient or prescription drug. After shipment to the warehouse, it can be distributed through various channels and/or dose formulations to the end consumer (patient).

Throughout the distribution process, regulatory information is captured to ensure patient safety and government compliance. With RPA, this information can be loosely aligned, creating interim information pools, referred to as products, to serve multiple functional areas. Rules can be written to 'glue' the information together, enabling the business to more efficiently conduct their day-to-day operations and receive real-time data.

For example, manufacturing can view the status of raw materials for a product, while the sales teams align with the wholesalers to monitor the demand of products by dose formulation and formulary access by geographical location. Translations between the product definitions are static and can be easily documented with rules, which are embedded within the RPA process. The advantage of having these rules is end users with some sophistication can administer their own translations, thereby providing them with the flexibility to adapt the information for their own consumption.

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<sup>3</sup> <https://www.forbes.com/sites/louiscolumnbus/2018/05/23/10-charts-that-will-change-your-perspective-of-big-datas-growth/#58dc4ae22926>

## Conclusion

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*Supply chains in pharma still face challenges brought about by the amount of time-consuming manual tasks required and the daily management of complex interdependent parts. With the on-set of new technologies and capabilities like intelligent automation, current limitations can be addressed with innovative approaches.*

Relevant use cases where intelligent automation should be considered as a practical solution include processes that are repetitive and rules-based where large volumes of data are accumulated, and workflows are across multiple systems that can create bottlenecks in the execution process. By partnering with the right technology partner, your business can unlock the benefits of IA and RPA across the various stages of the supply chain.



## ABOUT EPAM SYSTEMS

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