

Industry Report

State of Automation
Artificial Intelligence and
Data in Life Sciences

2022





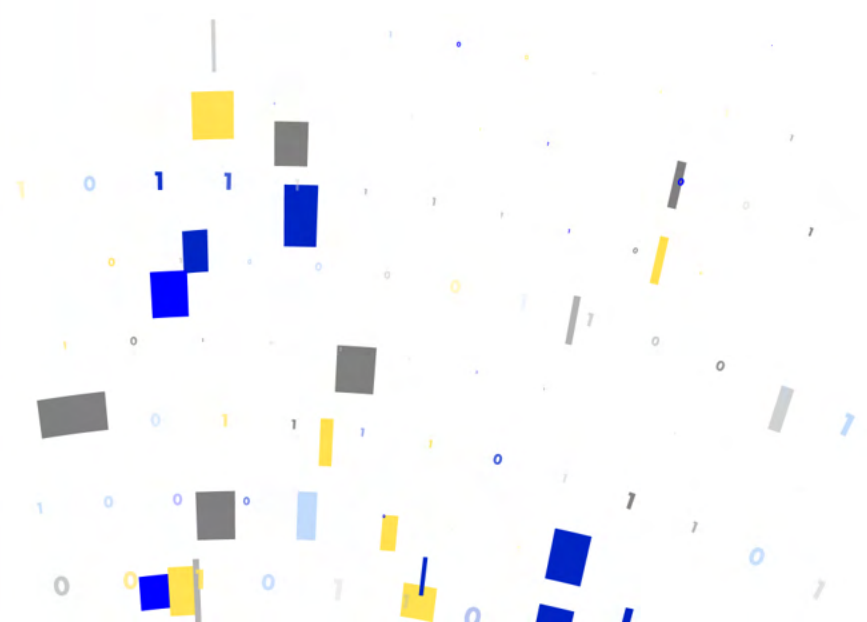
A Closer Look at an Ever-Evolving Industry



The change that life sciences organizations create is a direct reflection of their enthusiasm to build safe and effective drugs and therapies to market. While other industries have been forced to change either by economic or existential reasons, those in life sciences have embraced transformation to bring their discoveries to market faster. From regulatory and safety to clinical trials and medical affairs, every part of the drug development lifecycle is changing and, as a technology company, we have aimed to understand that change. This report is a pulse check of transformation within the Life Sciences industry.

Focusing on automation, artificial intelligence, and data, this report demonstrates the challenge that organizations face and their priorities for the future. By surveying over 75 organizations throughout the industry from CROs to biopharmas, the picture that emerged is one that embraces technological change, yet with some notable caveats. Life sciences organizations are eager to move forward in what they do with increased speed and efficiency, but they are stuck in a loop between wanting to invest and lacking the necessary investment and integration to do so.

As you continue to read the rest of the insights found within this report, we hope to provide a snapshot of the industry and uncover a path forward to continue the transformative momentum. The industry is transforming technologically, and the next achievement is within reach. Data and analytics is the future of what this transformation, uncovering the insights to inform organizations and aiding in decisions in real time to continue the breakthroughs that this industry orchestrates to better the world.





Automation Trends Upward, Industry Looks to Expansion

Top Automation Benefits

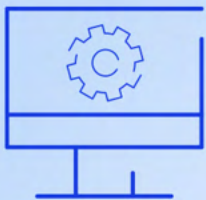
Efficiency gains or cost savings	35%
Deeper insights, enhanced decision-making	15%
Improved quality and compliance	27%
Increased flexibility and scalability	15%
Streamlined cross-functional collaboration	8%

In 2022, companies noted a 4% rise in automation usage, bringing the number to 72% of companies using some form of automation. However, there’s a marked difference in the type of automation that companies are embracing — the adoption of advanced automation seeing the most sizeable increases. With McKinsey reporting that only 31% of businesses across industries have fully automated at least one function, the adoption within the life sciences industry sets the bar much higher (McKinsey 2020). Why? Added complexity and the rising cost of drug and therapy development motivates life science organizations to utilize any advantage to optimize and close potential cost centers.

It’s fair to say that alongside automation lies efficiency. Organizations, from CROs to biopharmas to consultants, believe that efficiency gains and cost-savings are the most significant benefits of automation for an organization. Additionally, improved flexibility and compliance are considered another major incentive to those within life sciences.

With almost 50% of companies reporting that they will look further into automation within the next 24-months and 32% looking to explore automation solutions, the outcomes expected by companies are driving increased adoption with the value in alignment of improved process efficiency and cost savings.

As discovered in the 2021 edition of this report, automation is table stakes and remains that standard for life sciences organizations, a trend that shows no sign of slowing.



72%

of companies
use automation,
+4% year-over-year





Advanced Automation Yet Unrealized by Majority

When looking at the adoption of more advanced automation capabilities, including artificial intelligence, machine learning, deep learning, and natural language processing, organizations are largely still exploring.

Larger organizations, midsize to enterprise, are leading the way for increased adoption of advanced automation with a 6% gain year-over-year. However, while organizations are increasing their usage of advanced automation as seen above, the actual use of artificial intelligence only measures 37% with more than half of organizations remaining in the exploration phase.

It's notable that 38% of organizations are not utilizing advanced automation or artificial intelligence for research and development; almost half of that number are organizations within the emerging market. With enterprise and midsize organizations more likely to utilize advanced automation and artificial intelligence internally, this signals that organizations believe a sizeable investment is necessary for success.

Year-over-year realized benefits of advanced automation remained the same highlighting increased efficiencies and cost savings, but increased data analysis and speed improvements tied for the second most important aspect of using advanced automation.

What the results say is clear: automation, advanced or basic are valuable to increase efficiency and reduce overall costs.



38%

of organizations are not using
advanced automation or
artificial intelligence



Mind the Gap:

Data and Technology in Life Sciences

Data is only powerful when leveraged. Despite data becoming an ever-growing aspect of drug and therapy development, in practice, life sciences organizations trail industries in utilizing the information drawn from that data. While organizations like the Federal Drug Administration (FDA) utilize real-world data (RWD) and real-world evidence (RWE) to enrich their own findings, traditional life sciences organizations are behind the curve in adopting similar practices to gather deeper insights from their own data (US Food and Drug Administration 2022).

It's revealing that almost half (49%) of life sciences organizations are not connected to real-world data today and only 19% of organizations that are not connected have plans to do so within the next 24 months. Of the 32% of organizations that are connected to real-world data today, they are predominantly located within the enterprise and midsize company range which could infer that as a company grows, increased data enrichment is needed to compete within the industry.





Another window into the lack of data integration is the internal systems that life sciences organizations utilize today. While 57% of respondents stated that technology integration is very important to them, only 10% stated that they had a seamless integration between solutions. In fact, over 50% of organizations reported that it's difficult to integrate their current technology solutions.

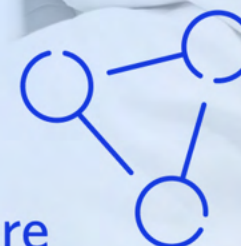
With this in mind, it follows that organizations who lack the desired technological integration would not be connected to real-world data but rather focused on ensuring that their internal solutions work and having limited support for real-world data connections.

Ease of Technology Integration

Very Difficult	19%
Somewhat Difficult	36%
Can be done with some interfacing	41%
Seamless integration	4%

32%

of organizations are
connected to RWD today

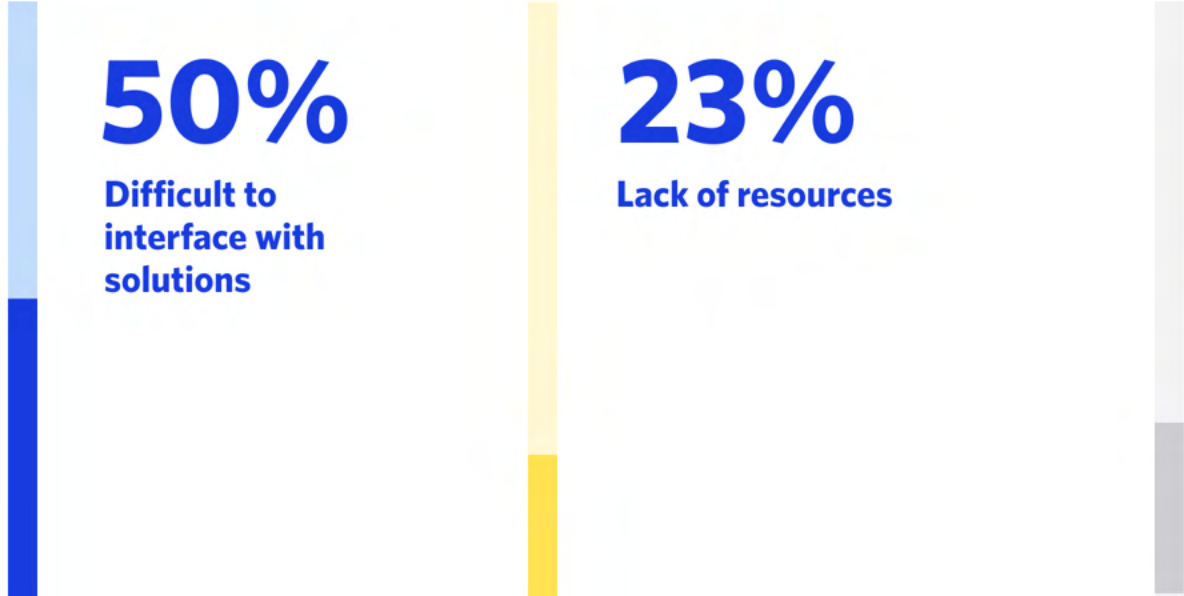


Stumbling Blocks to Advancement: Complications from Technology

The survey highlighted that despite technological advancements in the industry, there are significant barriers to advanced automation adoption and data integration. For example, while 50% of organizations noted that technology makes it difficult to interface with solutions, many cite that the most difficult part of advanced automation is a lack of resources dedicated to building a business case (23%) and difficulty integrating with existing technology and solutions (19%).

While budgetary concerns represent only 13% of the barrier, it's not for lack of internal sponsorship. Companies and individuals alike want to adopt this next level of automation but are barred by technology integration and resources to create an investment case.

If companies want to invest, the responsibility to close the gap is on vendors who provide solutions to life sciences organizations. Technology that is not open to integration taxes customer resources and makes it difficult for them to find any additional benefit from advanced automation and artificial intelligence. The sentiment from responders to this survey made clear that the lack of technological integration is frustrating to organizations regardless of size and reduces opportunities to increase efficiency.



50%

**Difficult to
interface with
solutions**

23%

Lack of resources

29%

**Difficulty integrating
with existing
technology**



Growth, Size, and Data: What Does it Mean Life Sciences Organizations?

Organizations of all sizes see the benefit of automation and artificial intelligence early in their journey. In fact, it is not directly correlated to organizational size. Over 55% of both emerging and midsize organizations are looking to expand into artificial intelligence, keeping pace with enterprise organizations (35%) who are also exploring. Additionally, midsize organizations are the most inclined to expand and increase their current level of automation within the next 24 months.

What's the cause of this? Growth. Organizations are looking forward to focusing on market share and remaining competitive through internal optimization. Finding value in automation, artificial intelligence, and data earlier than their competitors allows organizations to focus on streamlining workflows and process optimization alongside efficiency gains.

Only the future can show us which organizations will grow in the next year but the expansion of internal technology capabilities including artificial intelligence and data show that the life sciences industry is preparing for it.



It is now a reality that the technology is democratized regardless of company size enabling automation, artificial intelligence tools. With established models trained on industry-relevant data, organizations from the smallest startup to the largest enterprise can take advantage of advanced automation including artificial intelligence and machine learning. Data held by organizations can be enriched to yield highly accurate insights and automate the very manual processes of drug development — organizational size no longer has a direct impact to the accuracy, effectiveness, and value realized from the models used by life sciences companies.

Why the increased focus on data? Aside from the assertion that life sciences organizations have more of it, data analysis brings an additional edge leading to better outcomes, lowered risk, and reduced cost in a highly competitive space. Thus, increased access to automation and artificial intelligence allows organizations to identify additional insights that can accelerate and lead to the use of collected data for new practical applications. While more enterprise organizations are directly connected to real world data sources, organizations of all sizes see the value of enriching their internal data to build better insights and more accurate models to enhance drug discovery, potential adverse events, and post marketing potential. Smaller organizations can now partner with third-party organizations to access models that are built on relevant data for accuracy and utilizing approaches that pools but protects group data. In short, the conversation around data is about the insights that organizations can glean in addition to their adoption of automation and artificial intelligence and is set to only continue to grow alongside life sciences organizations.



Looking Deeper Across Development

Understanding the individual areas in drug and therapy development is essential to understanding the industry as a whole; it's a health check on the pulse of the industry. Each area was asked a specific question about the challenges or advantages within it relating to technology or automation.



Regulatory

Regarding regulatory affairs, it's a part of every step of development; optimizing this process means saving time and reducing errors. When asked about the greatest opportunity within this area, resoundingly respondents said that automation could aid in every function of regulatory teams. With the new regulation pending for the Identification of Medicinal Products (IDMP), organizations cite that over half of the respondents are uncertain about the upcoming regulation and how it will impact their products.



Clinical

Clinical is increasing in complexity and cost within drug and therapy development. That's the largest obstacle faced by clinical teams today that complicates automation and artificial intelligence adoption, with over 37% saying it is their chief concern to implement new technology with their clinical trials.



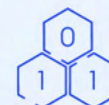
Safety

For patient safety teams, the requirements and monitoring are more in-depth than some other areas and with a great deal of continual and manual labor, it's no surprise that almost half of all safety teams are looking to automation and artificial intelligence to aid with those processes. In addition to transitioning from manual to automated processes and intake, over 35% of respondents stated that increased insight from their information would be a major benefit from automation and artificial intelligence.



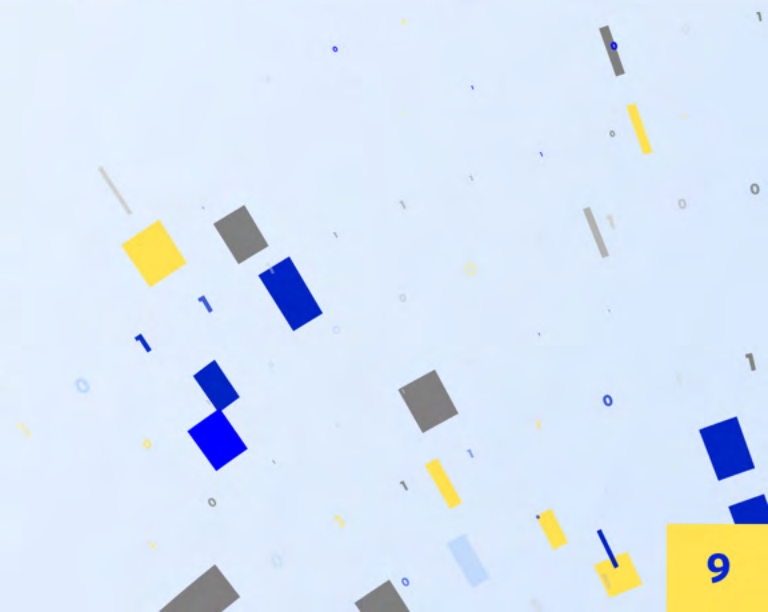
Medical Affairs

Seen as a strategic part of the organization, those in medical affairs and intelligence are contributors to the organization but when asked how much they contribute, over a third indicated that this area wasn't a priority for their organization with another third reporting that they want to do more but do contribute to the organization.



Data and Analytics

Next level of focus on data and analytics within Life Sciences shows the progression of the industry to move from data reporting to more active insights and even finding signals faster. Democratization of data has been a theme for technology to make it more accessible and increase visibility to focus attention on the valuable insights. Growth in this area will continue by fueling cost-savings, standardizing data insights to inform decision making.





Summary

Automation within the life sciences industry has advanced year-over-year, but there is additional help needed for businesses to take the next step toward intuitive platforms that leverage artificial intelligence and intelligent analytics. From the findings within this report, it's clear that the desire is there to use solutions that offer these options, but many are still seeking to identify them. As organizations continue to improve digital adoption and advancement across the drug development life cycle, more access will unlock hidden potential.



Methodology

ArisGlobal conducted a survey of stakeholders within the life sciences industry, including C-suite executives, directors, managers, and other leadership across the industry. Functional areas surveyed included clinical data management and operations, medical affairs, commercial, and information technology.

About the Survey

The survey shared with respondents featured a set of both general and targeted questions, distributed via an online survey tool. A total of 34 questions were included within the survey with 5 general questions and the remainder divided among the segments of Safety, Medical Affairs, Clinical, and Regulatory which were given to the organizations based on their business function.

About the Respondents

Respondents to the survey were from various parts of the life science industry including CROs, Pharmaceutical, Medical Device, Biotechnology, Service Providers, and consultants. Survey respondents were not incentivized to complete the survey and all responses were gathered preserving respondent anonymity.

About ArisGlobal

ArisGlobal is led by passionate individuals who support life sciences leaders in developing and monitoring breakthrough medicines and therapies. With more than 35 years of expertise in the life sciences industry, ArisGlobal develops technology products within the platform LifeSphere to power pharmaceutical and biotech research and development. Building on our commitment to corporate social responsibility and sustainability initiatives, we give back to the communities where we live and work – in the U.S, Europe, India, Japan, and China. For more information visit [ArisGlobal.com](https://arisglobal.com).

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