sas | Microsoft

HYPERAUTOMATION FOR LIFE SCIENCES

AUTOMATIC EFFICIENCY FOR INNOVATION

How an intelligent approach to automation can help life sciences companies evolve to push the boundaries of medical science.

Read the eBook >

BALANCING SPEED AND EFFICIENCY

As economic conditions change, the life sciences industry is undergoing a huge strategic shift. Competitive advantage still depends on a company's ability to bring innovative medicines and devices to market quickly. But speed is not the only thing that matters.

Life science companies need to ensure their products remain affordable for their largest clients—governments and healthcare systems. In an era where supply chain issues and global trade restrictions are inflating the cost of raw materials and logistics, the only option is to make development and manufacturing processes more efficient.

COSTS OF INNOVATION

- Complex regulatory constraints are raising the cost of product development.
- Large-scale decentralised clinical trials are extremely expensive to run.
- Fragile supply chains are inflating the cost of materials and manufacturing.
- Insights from real-world data may create additional aftermarket costs.

EFFICIENCY OPPORTUNITIES

Fortunately, life sciences companies have many opportunities to boost efficiency. Across research and development, manufacturing, marketing and compliance, many teams still rely on spreadsheets, emails, and even paper-based workflows. These manual processes are prime candidates for digital transformation, automation, and optimisation.

BEYOND AUTOMATION

However, there's a good reason the life sciences sector has been slower to embrace automation than many other industries. Due to the safety-critical nature of their work and the rigour of their regulatory environment, life sciences companies can't afford to take risks. Their processes are complex, with many decision points where expert human knowledge is needed. That means a simplistic, linear approach to automation can't meet their needs.

That's where hyperautomation comes in. In this eBook, we'll explore what hyperautomation is, why it works, and how it can help life sciences companies transform their processes. You'll learn how hyperautomation goes beyond traditional automation to help you boost efficiency, control costs, and get innovative products to market faster than ever before.

WHAT IS HYPERAUTOMATION?

The individual technologies behind hyperautomation aren't new, but their convergence opens up possibilities that organisations are only just starting to understand and deploy. You can think of hyperautomation as going beyond automation with a superpowered intersection of four key capabilities:

Automating tasks *with robotic process automation (RPA)*

RPA allows you to create a limitless supply of "robots" that are capable of completely automating routine tasks, such as extracting data from a document or system, validating or transforming that data, and then entering it into another system.

Automating decisions *with artificial intelligence (AI)*

AI enriches RPA with machine learning (ML) and other capabilities that can assess complex processes and automatically decide on the next best action or provide instant decision support for human experts—while constantly learning and improving over time.

Automating tasks *with no-code tooling*

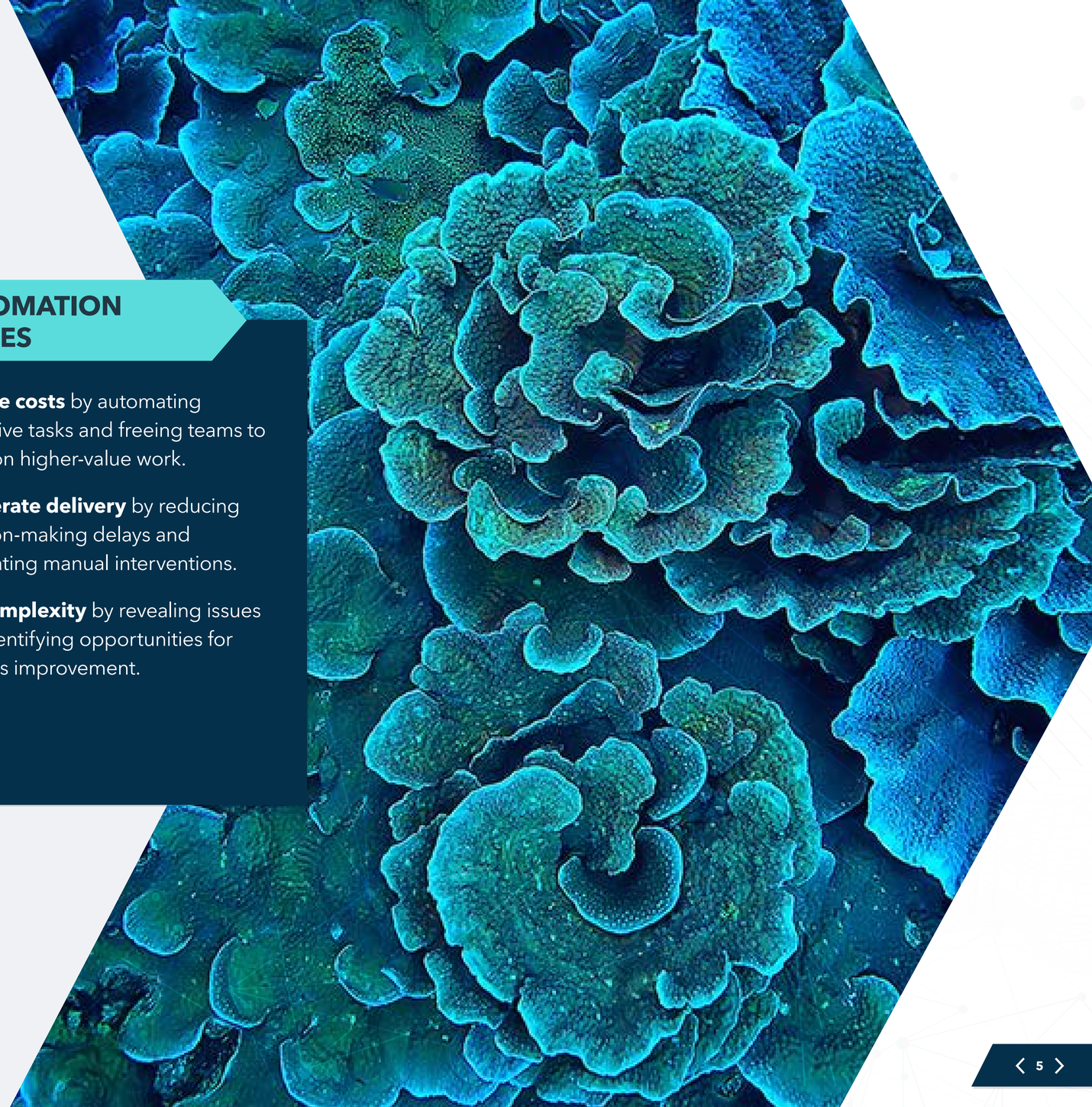
No-code tooling democratises hyperautomation design by empowering process owners to define their own automation flows—without needing deep technical knowledge of the systems involved, without support from IT, and without writing a single line of code.

Automating deployment *with cloud platforms*

Harnessing continuous integration and deployment pipelines and cloud services makes it easy to deliver, integrate and scale hyperautomated processes across the organisation.

KEY BENEFITS OF HYPERAUTOMATION FOR LIFE SCIENCES COMPANIES

- **Unlock innovation** by enabling rapid, cost-effective development of new clinical trials.
- **Improve engagement** by personalising interactions with trial participants, physicians and patients.
- **Simplify compliance** by automatically tracking and documenting activity for regulatory reporting.
- **Optimise manufacturing** by making smarter supply chain decisions for intelligent sourcing.
- **Reduce costs** by automating repetitive tasks and freeing teams to focus on higher-value work.
- **Accelerate delivery** by reducing decision-making delays and eliminating manual interventions.
- **Cut complexity** by revealing issues and identifying opportunities for process improvement.



HOW TO HYPERAUTOMATE...

CLINICAL TRIAL MANAGEMENT

The decentralisation, diversification and acceleration of clinical trials is putting greater pressure on life sciences companies and healthcare organisations to collaborate efficiently.

However, a lack of standardisation in systems, processes and data governance frameworks makes it difficult for teams to work together, share and analyse data, and ensure that their results are reproducible.

There's also a significant regulatory burden. Legislation such as the FDA's Title 21 CFR Part 11 and EU Annex 11 set out rigorous standards for information systems used in clinical trials. And individual markets often have additional requirements around the submission of information for regulatory review.

BUILDING ON STRONG FOUNDATIONS

The first step in solving these challenges is to create a standardised statistical computing environment (SCE), such as the SAS Life Sciences Analytics Framework (LSAF).

The importance of a valid, cloud-native SCE cannot be understated when it comes to clinical trials and data management. LSAF provides a controlled environment for clinical trials data, analyses and outputs, with an open statistical programming environment built on top of a secure, tamper-proof data repository.

In addition, LSAF is fully integrated with open source, giving users the flexibility to program in SAS, R and Python—and giving your organisation access to a broader range of talent. It also allows stakeholders from multiple organisations anywhere in the world to collaborate on clinical trials, with full confidence that their data is always safe, auditable and ready for regulatory scrutiny.

TAKING EFFICIENCY TO THE NEXT LEVEL

With LSAF providing foundational data management, governance and collaboration capabilities, hyperautomation can add a layer of intelligent workflow management that takes efficiency to the next level.

For example, clinical trials typically involve monitoring how patients react to a particular course of treatment. This monitoring often requires senior radiologists or other specialists to analyse scans or samples. The dependency on their expertise can create bottlenecks that slow down the clinical trial process.

SAS has worked with **Amsterdam University Medical Centers (UMC)** to develop a deep learning model that can analyse CT scans to evaluate how colorectal cancer tumours are responding to chemotherapy—providing valuable decision support for radiologists and reducing the risk of false negatives or false positives.

In a clinical trial setting, life sciences companies can use hyperautomation to embed such models into automated workflows for patient reviews. Each time a trial participant has a CT scan, the model can assess their tumour automatically, and the results are instantly captured in their patient record within the LSAF repository. Moreover, if the model indicates that the tumour is not responding to treatment, the hyperautomated workflow can prioritise the scan for immediate review by the radiologist, helping to accelerate clinical decision-making and improve patient outcomes.

HOW TO HYPERAUTOMATE...

PROVIDER AND PATIENT ENGAGEMENT

As the world of healthcare has become more digital, the way life sciences companies engage with healthcare providers has changed too. Physicians are constantly bombarded with marketing messages via apps, websites, social networks and chatbots. These generic marketing campaigns often fail to target physicians' individual needs or catch their attention, and can even undermine their relationships with your sales reps.

Companies also need to find smarter ways to interact with patients. If clinical trial participants stop following the planned treatment pathway or pull out before the trial is completed, the impact on research can be devastating. Identifying these issues as early as possible and reaching out to patients who are at risk can help to keep research projects on track.

BEYOND CRM

Today's customer relationship management (CRM) systems can provide a solid foundation for solving this challenge by capturing data about interactions with healthcare providers and patients across all channels—including both traditional sales meetings and the full spectrum of digital channels.

However, CRM alone is not enough to drive personalised, relevant engagement. Life sciences companies also need a way to analyse the needs and preferences of thousands of customers and patients, so that they can prompt marketing, sales and clinical trials management teams to reach out at the right time, with the right message, and via the right channel.

OPTIMISING COMMUNICATIONS

SAS has developed a hyperautomation framework for healthcare provider engagement that we call **DNA**:

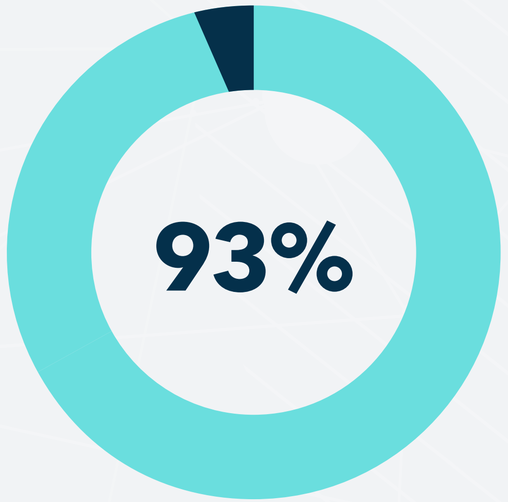
- **Discover**: Collect and combine engagement data from direct and digital interactions with healthcare providers across all channels.
- **Nurture**: Apply state-of-the-art analytical techniques including artificial intelligence and machine learning (AI/ML) to gain actionable insights.
- **Act**: Orchestrate and automate the best marketing decisions and provide decision support for sales reps to create positive impact.

The DNA framework enables life sciences companies to generate next-best-engagement recommendations for individual physician relationships—and put those recommendations into action instantly, whether that means triggering a face-to-face meeting with a sales rep, messaging via digital channels, or a hybrid, multichannel approach.

For example, SAS has worked with one of the world's largest life sciences companies to analyse and optimise how it delivered information to physicians during webinars. Insights from DNA highlighted areas of friction in the webinar experience, prompting the company to switch to a shorter, mobile-first format. **As a result, physician engagement increased from 6% to 93%.**

The same technologies could also be used in a clinical trial context to analyse, recommend and automate outreach to participants who are not following their treatment plan or whose behaviour indicates a risk of dropping out of the trial.

As a result, physician engagement increased from 6% to



HOW TO HYPERAUTOMATE...

REAL-TIME MONITORING

Over the next few years, the use of real-world data promises to transform pharmaceutical and medical device development. Gaining greater access to data about how products are used not only during clinical trials, but also once they are in-market, will unlock hugely valuable insights to feed into new product development.

HARNESSING THE INTERNET OF THINGS

Taking advantage of real-world data will require a solid data foundation, with platforms capable of ingesting and analysing streams of data from wearables and other devices, captured through the Internet of Things (IoT). The volume, velocity and variety of data that will flow from thousands or even millions of devices in real time presents significant technical challenges. SAS has experience of implementing these types of platforms for large-scale use cases in many industries—from smart grid projects for utilities companies to sensor-driven flood prediction for government agencies.

NEXT-LEVEL AUTOMATED DECISIONING

Hyperautomation can take real-time monitoring to the next level by integrating AI models into processes to automate decision-making and provide decision support. For example, if a medical device detects that a patient is experiencing an adverse event, such as a deterioration in their vital signs, the model can assess risks and help to identify root causes. By helping to determine whether the patient's health is worsening or whether the device has developed a fault, the model can trigger automated workflows to alert medical or engineering teams appropriately and address problems fast.

INTELLIGENT SOURCING

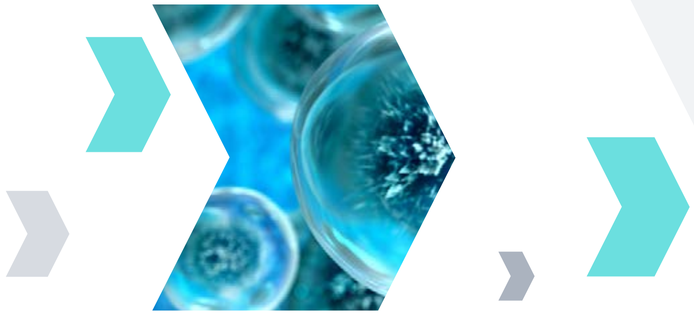
Geopolitical disruptions have shown that globalised supply chains are less resilient than most life sciences companies expected. At the same time, the recent pandemic highlighted the enormous value of being able to develop, manufacture and distribute new products as quickly as possible.

SUPPLY CHAIN MANAGEMENT

Today's enterprise resource planning and supply chain management platforms provide powerful tools for creating and managing global supply chains with dozens or even hundreds of participants. Yet supplier risk management and optimisation are still challenging for life sciences companies, because beyond their immediate suppliers, they lack total visibility of all the factors that can impact production further down the supply chain.

REAL-TIME RISK-BASED OPTIMISATION

Hyperautomation can mitigate supply chain risk by embedding risk models into supplier decisioning processes and providing real-time guidance to inform supplier selection. Models can integrate risk data from multiple external sources to evaluate geographical, political and economic risks for each supplier, as well as insights from internal ERP and SCM data. When a particular supplier or production facility is flagged as being unduly risky for a particular contract, the system can suggest alternatives and help procurement teams find solutions fast.



SAS AND MICROSOFT

SAS and Microsoft are in a unique position to help life sciences companies unlock the full value of hyperautomation. With intelligent decisioning and real-time composite artificial intelligence at the core of every workflow, companies can scale to automate even their most complex processes—and be faster, safer, and more efficient in delivering innovative treatments to market.

ENTERPRISE DECISIONING

SAS Intelligent Decisioning acts as the central brain that empowers you to integrate decision-making and decision support into all your hyperautomated processes. From traditional statistical modelling to forecasting and optimisation, machine learning and deep learning, you can always choose the right tool for the job.

AI LIFECYCLE MANAGEMENT

Building the right model is only the first step. You also need to be able to train, test, deploy, manage, and retrain it. SAS is a leader in operationalising AI, helping organisations get models to production faster and keep them accurate, unbiased, and fit-for-purpose as the needs of the life sciences industry evolve.

RESPONSIBLE AI

Ensuring transparent decision-making is vital for compliance.
That means every hyperautomated process you build needs to be fully auditable, and every decision made during that process must be explainable. SAS and Microsoft offer a unique, end-to-end governance model for responsible AI-powered hyperautomation.

LOW-CODE DEVELOPMENT

Instead of depending on software engineers to develop hyperautomation flows, SAS Intelligent Decisioning, Microsoft Power Automate and Microsoft Power Apps provide user-friendly low-code tools that make it easy for non-technical employees to assemble processes and embed intelligent decisioning models, without needing to write a single line of code.

RAPID DEPLOYMENT

SAS and Microsoft provide a ready-made, cloud-based platform that is easy to deploy, quick to connect to other systems and data sources, and simple to scale up to handle processes for marketing, large-scale manufacturing and globally distributed clinical trials.

INDUSTRY EXPERTISE

SAS and Microsoft are already trusted partners for some of the world's largest life sciences companies. By building on your existing investments, relationships and expertise, SAS and Microsoft can help accelerate your adoption of hyperautomation—in many cases, delivering meaningful improvements in weeks, not months.

HYPERAUTOMATION FOR LIFE SCIENCES

NEXT STEPS

To learn more about how SAS and Microsoft can help your business harness hyperautomation to accelerate clinical trials management, integrate real-world data, simplify compliance, and deliver innovative products to market faster, reach out to our Client Engagement lead, Emma Chester, Emma.Chester@sas.com

For more information, please search **SAS Hyperautomation** and talk to our experts today.

sas | Microsoft