



# AI-deas to Action: Operationalizing Generative AI in Life Sciences

January 2025: Complimentary Abstract / Table of Contents

Market Report

Life Sciences Business Process, Life Sciences Information Technology



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- ▶ Outsourcing Excellence
- ▶ Payer and Provider Business Process
- ▶ Payer and Provider Information Technology
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- ▶ Price Genius – AMS Solution and Pricing Tool
- ▶ Pricing Analytics as a Service
- ▶ Process Intelligence
- ▶ Process Orchestration
- ▶ Procurement and Supply Chain
- ▶ ProcureTech
- ▶ Recruitment
- ▶ Retail and CPG
- ▶ Retirement Technologies
- ▶ Revenue Cycle Management
- ▶ Rewards and Recognition
- ▶ SAP Services
- ▶ Service Optimization Technologies
- ▶ Software Product Engineering Services
- ▶ Supply Chain Management (SCM) Services
- ▶ Sustainability Technology and Services
- ▶ Talent Genius™
- ▶ Technology Skills and Talent
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# Background of the research

With remarkable advances in 2023 and 2024, generative AI is emerging as a transformative force poised to revolutionize the life sciences industry. In 2022, the average cost of developing a new drug among the top 20 global biopharmaceutical companies reached approximately US\$2.3 billion. Generative AI, with its ability to automate data-intensive tasks and accelerate complex research processes, offers a powerful solution to this challenge. By streamlining drug discovery, optimizing clinical trials, and enhancing decision-making, these innovations promise to significantly reduce the time and cost required to bring new medicines to market, setting a new benchmark for industry efficiency and innovation.

However, adopting generative AI comes with its own challenges including concerns about data privacy, model accuracy, training resource demands, and ethical implications. To address these issues, providers are

leveraging advanced technologies such as encryption, anonymization, and federated learning for secure data handling. Continuous validation processes and feedback loops are improving AI reliability, while modular architectures and scalable cloud infrastructures provide the flexibility required for smooth integration and deployment.

As providers work to address challenges, the focus is slowly moving beyond experimental pilot projects to full-scale implementations.

## In this report, we are primarily focusing on:

- The value promise generative AI across different segments of the life sciences value chain
- Generative AI market adoption in life sciences
- Provider profiles

## Scope of this report

**Geography:** global

**Industry:** life sciences

**Services:** generative AI

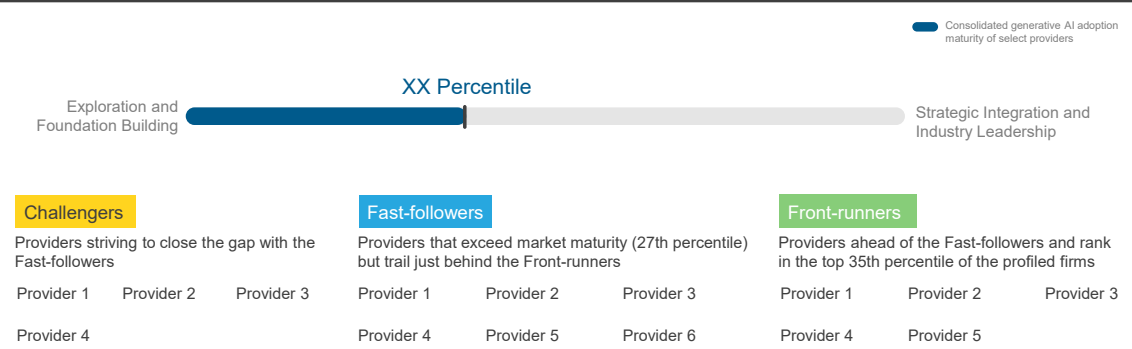
**Provider profiles:** 15 life sciences providers

# This study offers three distinct chapters providing a deep dive into key aspects of generative AI in the life sciences market; below are four charts to illustrate the depth of the report

Value promise generative AI across the life sciences value chain

Drug discovery, research, and pre-clinical trials			Generative AI value promise
<b>Data overload and fragmentation</b> Researchers face difficulties in extracting actionable insights from fragmented datasets, leading to delayed decision-making and missed opportunities for breakthroughs.	<b>Long development cycle</b> The pre-clinical phase involves testing thousands of compounds, which is both time-consuming and costly. Iterative processes, often slowed by manual workflows and suboptimal modeling, lead to delays in identifying viable candidates.	<b>Limited predictive capabilities</b> The inability to effectively model complex biological interactions results in high attrition rates during later stages of drug development. This increases costs and delays time-to-market for innovative treatments.	Generative AI can revolutionize drug discovery by addressing critical inefficiencies and transforming the development process. It can enable researchers to simulate complex biological systems, identify promising drug candidates faster, and predict off-target effects with greater accuracy. By leveraging advanced predictive models and integrating multimodal datasets, it can provide actionable insights from vast and fragmented data sources. Generative AI can also reduce the time and cost of hypothesis testing and compound screening, significantly lowering failure rates in pre-clinical trials. With its ability to streamline processes and enhance decision-making, it can pave the way for innovative therapies and a faster path to market.
Clinical trials			
<b>Patient recruitment and retention</b> Recruiting eligible participants and retaining them throughout a trial is one of the largest hurdles. Factors such as limited awareness, logistical challenges, and lack of personalized communication often lead to high dropout rates.	<b>Data quality and bias management</b> Poor data quality impacts the validity of results, while standardization of data collection and rigorous monitoring help prevent biases, ensuring reliable and effective outcomes.	<b>Complex trial design and monitoring</b> Clinical trial design, monitoring, and regulatory submissions are complex and resource-intensive, with challenges in protocol optimization, ensuring compliance, and preparing accurate documentation.	Generative AI offers a huge value promise in the clinical trials segment by enhancing patient recruitment, improving retention, and optimizing trial design. By utilizing advanced predictive analytics, it optimizes enrollment and retention, efficiently identifying suitable participants and increasing awareness through targeted outreach. It can help streamline protocol development, predict outcomes, and automate administrative tasks, ultimately accelerating trial timelines and improving the efficiency and reliability of clinical research. Thereby, leading to faster delivery of innovative therapies and better patient outcomes.

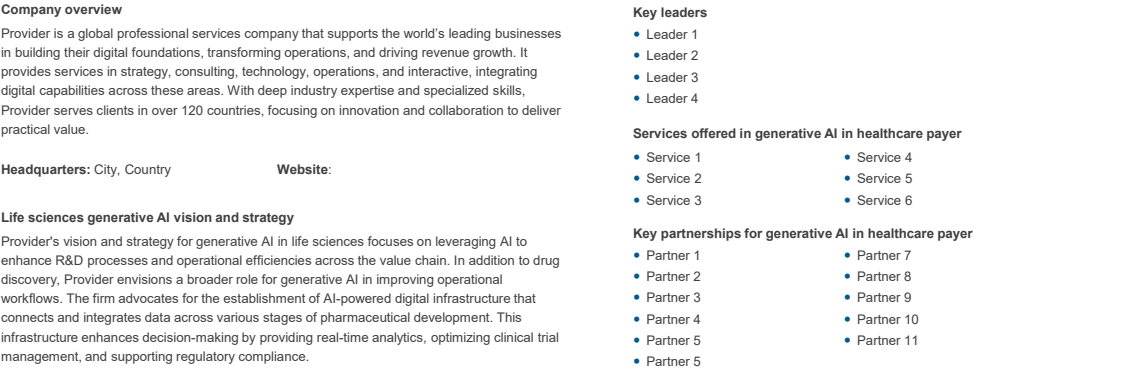
Generative AI life sciences market adoption assessment



Remarks on generative AI adoption maturity and top use cases



Remarks on provider overview and capabilities



# Research calendar

## Life Sciences Business Process

	Published	Current release	Planned
Reports title	Release date		
MedTech Operations PEAK Matrix® Assessment 2023			November 2023
Life Sciences Operations – Provider Compendium 2024			February 2024
MedTech Operations – Provider Compendium 2024			March 2024
Exploring Sourcing Considerations for Life Sciences Services from the Buyers' Perspective			May 2024
Life Sciences Regulatory and Medical Affairs Operations PEAK Matrix® Assessment 2024			June 2024
Optimizing Clinical Development Rol: Trends, Challenges, and Opportunities in Patient Recruitment			June 2024
<a href="#">AI-deas to Action: Operationalizing Generative AI in Life Sciences</a>			January 2025
Harnessing AI to Drive Efficiency and Compliance in Regulatory Affairs			Q1 2025
Life Sciences Analytics and AI Services for Commercial PEAK Matrix® Assessment 2025			Q1 2025
Pharmacovigilance Operations PEAK Matrix® Assessment 2025			Q1 2025
Life Sciences AI and Analytics for Commercial Compendium 2025			Q2 2025
Life Sciences Clinical Data Management Services PEAK Matrix® Assessment 2025			Q2 2025
Pharmacovigilance Operations Provider Compendium 2025			Q2 2025
Pharmacovigilance: State of the Market			Q3 2025
Unlocking the Potential of RWE with AI: Moving From Descriptive Data to Actionable Insights			Q3 2025

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# Research calendar

## Life Sciences Information Technology

Published **Current release** Planned

Reports title	Release date
Life Sciences Digital Services Specialists PEAK Matrix® Assessment 2024	January 2024
Demystifying High-performance Computing (HPS): a Guidebook for Life Sciences	February 2024
Life Sciences Digital Services Specialists Provider Compendium 2024	March 2024
Revolutionizing Life Sciences Customer Engagement: Embracing Hybrid Commercial Models (HCMs)	April 2024
Exploring Sourcing Considerations for Life Sciences Services from the Buyers' Perspective	May 2024
The Promise of Generative AI in Clinical Development	July 2024
Life Sciences Digital Services for Mid-market Enterprises PEAK Matrix® Assessment 2024	August 2024
Life Sciences Customer Experience Platform (CXP) Adoption Playbook	August 2024
Life Sciences Next-generation Customer Engagement Platforms (CEP) PEAK Matrix® Assessment 2024	November 2024
<b>AI-deas to Action: Operationalizing Generative AI in Life Sciences</b>	<b>January 2025</b>
Life Sciences Analytics and AI services for Commercial PEAK Matrix® Assessment 2025	Q1 2025
Life Sciences Digital Services PEAK Matrix® Assessment 2025	Q1 2025
Veeva Services PEAK Matrix® assessment 2025	Q2 2025
Changing Paradigm of Medical Affairs	Q2 2025
Life Sciences Digital Services Specialists PEAK Matrix® Assessment 2025	Q3 2025

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