
Generative AI
for life sciences
Enhance revenue, boost efficiency,
and mitigate risk with GenAI, curated
for industry needs.
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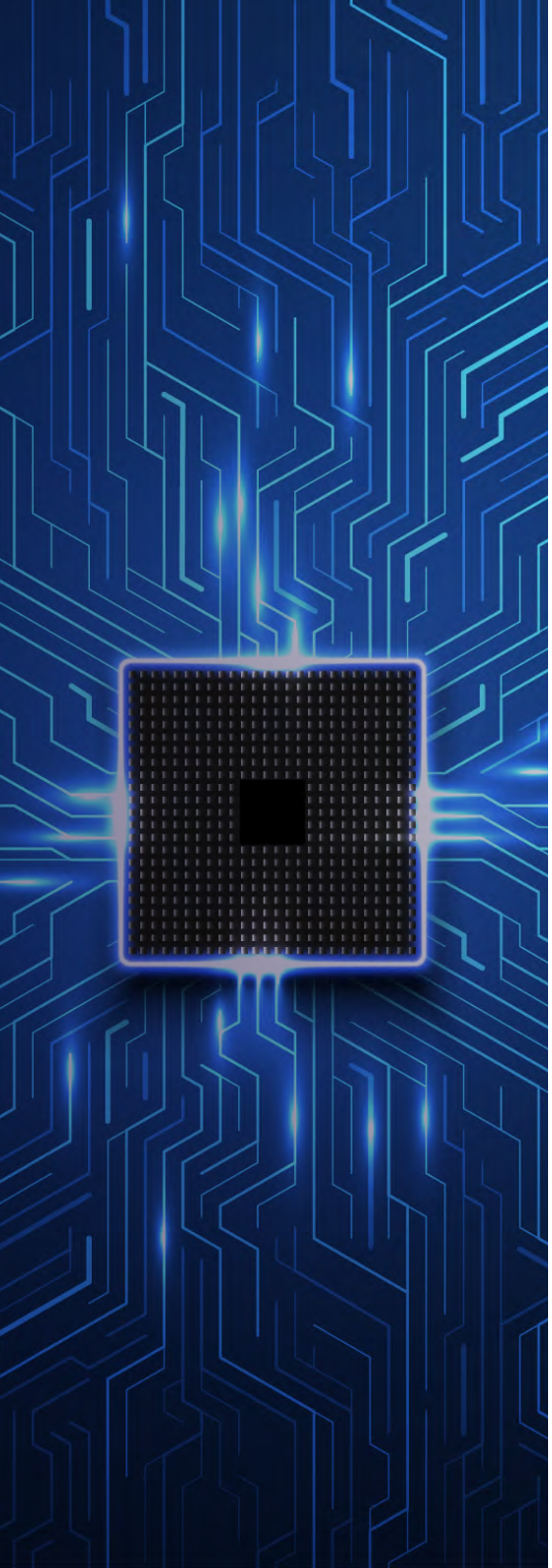

Generative AI's impact across the value chain in life sciences

The life sciences industry confronts multifaceted challenges, with research and development complexity being a pivotal concern. The intricate nature of life sciences research demands extensive data analysis and interpretation, often entailing complex biological processes. Generative AI emerges as a transformative tool to address this complexity, rapidly analyzing vast datasets and expediting drug discovery and development phases.

Furthermore, regulatory compliance poses a formidable challenge, requiring meticulous documentation and adherence to stringent guidelines. Generative AI offers a solution by automating compliance tasks, ensuring precision, and mitigating the risk of regulatory issues. Additionally, robust data security measures are imperative in a landscape where the sensitivity of patient data is paramount. Generative AI enhances security protocols, implements advanced encryption, and fortifies privacy measures to safeguard valuable information.

However, alongside these benefits, integrating AI in the life sciences domain has inherent risks and considerations. Ethical concerns arise, particularly in decisions related to patient treatment and genetic manipulation, necessitating a careful and transparent approach to AI implementation. Moreover, the potential for data bias in generative AI models, if not vigilantly monitored, raises the need for rigorous validation and ongoing scrutiny to mitigate skewed results. In regulatory compliance, AI introduces challenges, emphasizing the importance of regular updates and collaboration with regulatory bodies to navigate the dynamic landscape successfully.

The making of a generative life sciences enterprise

GenAI has the potential to offer a wide range of use cases and applications in the life sciences industry.

Molecular development

GenAI is crucial in predicting molecular conformations, including those of chemical and protein molecules. This is achieved by fine-tuning models with scientific, experimental, and laboratory data. The application of GenAI allows for the visualization and generation of novel molecules, enhancing the overall molecular novelty. This advancement proves instrumental in enabling research and development groups to capitalize on collaborations and partnerships. The in-silico approach to molecular discovery facilitates rapid innovation, leveraging automation to reduce dependence on human resources and enhance R&D efficiency. Moreover, GenAI contributes to improving drug risk profiles, particularly in addressing toxicity issues, thereby reducing portfolios risks and enhancing selectivity or function. It further enables swift molecular characterization and development, empowering researchers to redirect their focus toward more value-adding scientific inquiry.

In the context of readiness, GenAI demonstrates its adaptability by allowing the exposure of source data from existing scientific and assay database repositories. However, the utilization of this technology brings attention to critical considerations. Processes and assumptions related to scientific data and its repeatability come to the forefront, necessitating a thorough examination. The challenge lies in ensuring that data adheres to the principles of being findable, accessible, interoperable, and reusable (FAIR). Consequently, new research and informatics processes must be developed to address these concerns and fully unlock the potential of GenAI in advancing molecular development.

GenAI advances molecular development, enhancing innovation, efficiency, and risk management

Autonomous decisioning for sales

Sales representatives leverage GenAI-based tools to discern optimal actions based on customer preferences and a wealth of commercial data from internal and external sources. These tools offer succinct customer information summaries, ensuring sales representatives maintain consistent operational excellence.

The correlation between enhanced sales execution and revenue growth is undeniable. Automated insights and guidance empowers sales representatives to concentrate on target accounts and messaging, incorporating best practices from top-performing representatives to elevate the overall effectiveness of the sales team. This streamlines processes and enhances the overall experience for sales representatives, home office users, and healthcare providers.

It is time to integrate GenAI capabilities into existing tools. Life science manufacturers, equipped with robust systems and significant investments in sales channels, are poised to embrace these advancements. Stakeholders, especially healthcare providers, express a growing demand for a more personalized experience, urging life sciences to align with these expectations and deliver tailored solutions.

GenAI optimizes sales decisions, enhancing performance and personalized customer interactions

Regulatory filing

Life sciences companies often face challenges with multiple regulatory filings. They could leverage large language models (LLMs) to search regulatory data sources. These LLMs can summarize content and generate personalized insights, facilitating the creation of drafts for regulatory filing. This streamlined approach significantly reduces the time required for information aggregation and summarization and validates data accuracy and consistency in filings. The overall result is an improvement in the quality of submissions and a reduction in associated risks.

LLM-based applications prove highly effective in analyzing and summarizing structured text-based content, particularly suited for tasks like regulatory filing preparation. Internal regulatory teams are already adept at tracking critical updates and trends. Regulators are unlikely to raise significant concerns, given the presence of a human in the loop responsible for reviewing and updating before submission. This amalgamation of technology and humans ensures a robust and reliable approach to regulatory filing processes.

Personalization for customers

LLM-enabled tools emerge as powerful instruments for life sciences companies, generating personalized channels and pre-approved content recommendations for healthcare providers and patients. These recommendations leverage a comprehensive understanding of customer preferences, behaviors, motivations, and past interactions, allowing life sciences organizations to tailor online and offline interactions. This personalized approach aligns seamlessly with the overall journey of healthcare providers and patients, fostering a more meaningful connection.

The potential of personalized experiences and content extends beyond mere engagement, offering the capacity to address unmet needs and enhance comprehension of brand value. Moreover, LLMs in this context proves efficient in reducing the human effort required for the personalization process while ensuring a balanced approach aligned with customer expectations. Deeper engagements resulting from personalized interactions contribute to increased trust and brand loyalty.

Although life sciences-specific tools for personalization are yet to materialize fully, the trend is gaining momentum, especially in consumer-oriented businesses. Successful deployment of personalization hinges on fostering a customer-centric culture and implementing governance for technology and data harmonization to operationalize holistic customer journeys. As customers increasingly desire a more personalized experience, life sciences firms must adapt to meet these evolving preferences, particularly as the trend toward digital engagement continues to grow.

GenAI tailors healthcare and patient interactions, driving engagement, trust, and brand loyalty

Pharmacovigilance signal detection

Pharmacovigilance signal detection can undergo a transformative enhancement with LLMs by using pre-trained models on a diverse range of safety data. This includes publications, unstructured cases, and real-world data (RWD), significantly augmenting existing search and analytics capabilities.

Beyond its technical prowess, the impact of LLMs on safety signal profiling extends to potential revenue implications. By efficiently identifying safety issues, there's a prospect of expediting regulatory approvals, accelerating market access, and concurrently reducing costs. Automating routine safety analyses and facilitating more complex analytics workflows underscore the efficiency gains.

A profound understanding of drug safety profiles is crucial, ensuring the timely reporting of adverse event information. This aligns with regulatory requirements and contributes to an environment of heightened safety awareness.

The integration of LLM-enabled tools into safety vigilance is challenging. Accessing and interpreting data from disparate systems pose hurdles, necessitating careful consideration. However, internal safety vigilance teams, already accustomed to applying analytics tools, may readily embrace LLM-enabled tools for enhanced efficiency in finding safety signals. Moreover, regulators express a keen interest in supporting the industry's adoption of innovative technologies for uncovering safety trends and signs, fostering a collaborative environment for advancing safety practices.

GenAI enhances pharmacovigilance signal detection, expediting approvals and reducing costs

EBR mining

In quality assurance, leaders employ LLM-enabled tools to validate and enrich data within electronic batch record (EBR) systems. These tools meticulously analyze batch data, generating detailed EBRs with standardized templates. This process encompasses capturing crucial manufacturing data, process steps, quality control checks, and regulatory compliance information. Integrating LLMs significantly enhances the efficiency and compliance of batch record creation, ensuring a more streamlined and error-resistant approach.

This transformative approach facilitates the accelerated generation of initial reports, liberating the capacity of quality assurance leaders to delve into more in-depth analysis and process improvement initiatives. The tools contribute to creating more consistent and comprehensive EBRs, thereby mitigating risks associated with manufacturing errors and bolstering overall quality control.

Challenges arise in delivering on customization and real-time processing needs in leveraging LLMs. The imperative to demonstrate the accuracy of first drafts becomes crucial. Quality teams express eagerness to extract maximum value from EBR data. However, the potential risk of a global or regional ban on LLMs in quality use cases looms as a consideration in the evolving landscape.

GenAI refines EBR mining, boosting efficiency, compliance, and quality control

Life sciences companies have a significant opportunity to leverage generative AI across functions of R&D, clinical development, commercialization, and manufacturing. We at Brillio could help you assess your readiness with our proprietary generative AI readiness index across various dimensions such as strategy, data quality, adoption, governance, LLMOps, and CVOps and identify gaps to attain the desired state.

We help bridge the gaps identified with a team of cross-skilled professionals—solution consultants, data scientists, prompt engineers, responsible AI consultants, generative AI ethics officers, generative AI and human coordinators, and generative AI bias detectives. Our solution has governance baked in with the principles of justness, transparency, privacy, compliance, grounding and evaluation coupled with domain-specific cognizance and validation of legal, regulations, ethics, and policies to provide full coverage. At the end of it all, you get to enjoy faster time to market with our domain-specific technology accelerators for data understanding, model exploration, and management.

Connect with us for a readiness assessment.

ABOUT BRILLIO

Brillio is one of the fastest growing digital technology service providers and the partner of choice for many Fortune 1000 companies seeking to turn disruptions into competitive advantages through innovative digital adoption. We help clients harness the transformative potential of the four superpowers of technology: cloud computing, Internet of Things (IoT), artificial intelligence (AI) and mobility. Born digital in 2014, we apply our expertise in customer experience solutions, data analytics and AI, digital infrastructure and security, and platform and product engineering to help clients quickly innovate for growth, create digital products, build service platforms, and drive smarter, data-driven performance. With 17 locations across the US, the UK, Romania, Canada, Mexico, and India, our growing global workforce of nearly 6,000 Brillians blends the latest technology and design thinking with digital fluency to solve complex business problems and drive competitive differentiation for our clients. Brillio was certified by Great Place to Work in 2021, 2022 and 2023.

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