FROST & SULLIVAN

BEST PRACTICES

2026

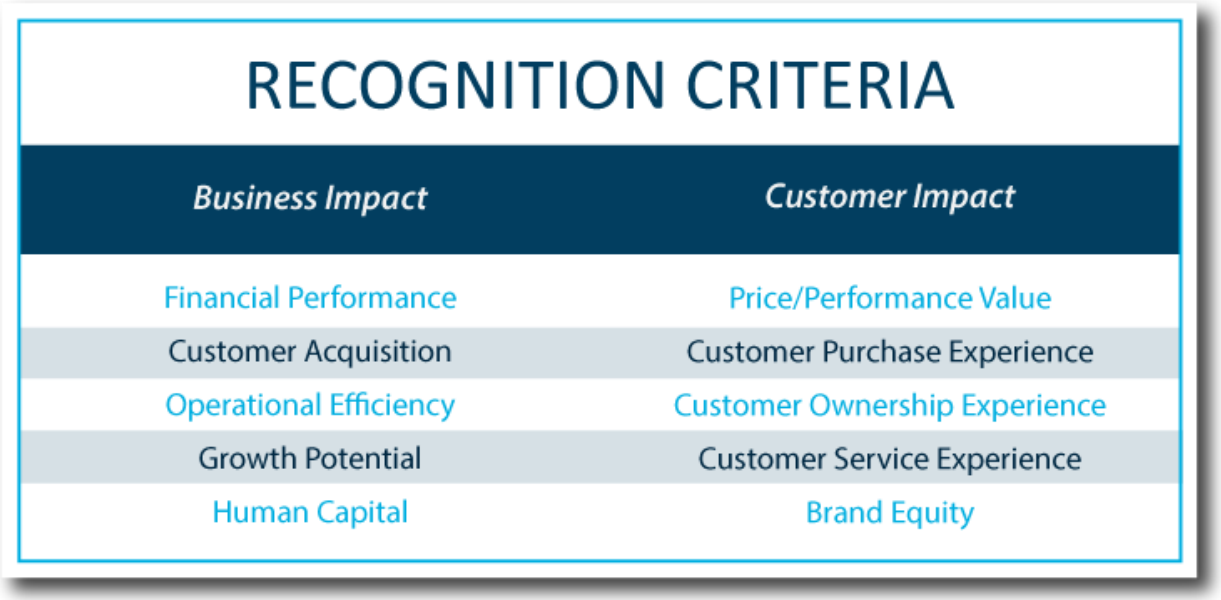
NORTH AMERICAN HEALTHCARE LARGE LANGUAGE MODEL

CUSTOMER VALUE LEADERSHIP

John Snow LABS

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. John Snow Labs excels in many of the criteria in the healthcare large language model space.



The Transformation of the North American Healthcare Large Language Model Industry

The North American healthcare large language model (LLM) market is moving from experimentation to operational scrutiny. Many providers, payers, pharmaceutical companies, and healthcare technology firms currently focus on unlocking value from unstructured notes, documents, imaging, and multimodal records. However, they must do so under strict privacy requirements, workflow integration burdens, clinical safety expectations, model transparency demands, and intense pressure to show near-term return on investment. These conditions create several structural challenges for the market:

- General-purpose models often lack healthcare-specific accuracy and consistency.
- Token-based economics can become difficult to sustain at production scale.
- External deployment models can create privacy and governance concerns.
- Many organizations still struggle to translate promising pilots into usable, enterprise-grade workflows.

As the market matures, buyers will increasingly favor solutions that combine measurable accuracy, deployment realism, governance, and operational value rather than raw model capability alone.[1] [2]

Within this environment, John Snow Labs develops healthcare language models, clinical natural language processing (NLP) pipelines, medical LLMs, de-identification systems, and multimodal document-processing capabilities for providers, pharmaceutical companies, payers, academic medical centers, and healthcare technology organizations. The company defines its role in the market by directly addressing core industry challenges. It improves task-level performance through healthcare-specific models and supports high-volume workflows such as de-identification and clinical data extraction with more sustainable economics. It also enables organizations to work with sensitive data in secure environments and provides technology that spans from research to production-ready healthcare applications. The company's market presence reflects a combination of domain specialization, production readiness, and technical depth, reinforced by a large peer-reviewed research footprint and broad enterprise adoption across healthcare and life sciences.[3] [4] [5]

Healthcare AI Built for Real-World Value

John Snow Labs builds its value proposition around a clear principle: healthcare organizations require models that perform reliably at a sustainable cost structure in production. The company therefore emphasizes 3,000+ healthcare-specific NLP, LLM, and VLM models designed for operational use across general medicine, oncology, radiology, mental health, risk factors, social determinants of health, medical question answering, de-identification, summarization, and visual document understanding. This specialization is visible in its oncology offerings, where John Snow Labs showcases models and pipelines that extract more than 60 oncology-related entities, including extracting tumor staging, histology, site, laterality, lines of therapy, response to treatment, biomarkers, and family history from clinical text, illustrating how the company translates domain expertise into practical clinical tools rather than relying on general-purpose models alone.[6] [7]

In de-identification, the process of removing protected health information from clinical text, precision, consistency, and throughput determine whether automation can replace manual review. John Snow Labs reports a 96% F1 score for protected health information detection, compared with 91% for Azure, 83% for Amazon Web Services, and 79% for GPT-4o. The same peer-reviewed paper reports that the solution is more than 80% cheaper than Azure and GPT-4o and avoids token-based pricing. In practical terms, this combination gives organizations a strong ability to run high-volume text processing with predictable economics and less operational variability.[8] John Snow Labs stands out by turning healthcare-specific

[1] https://www.healthit.gov/topic/laws-regulation-and-policy/hti-1-final-rule. Accessed March 2026
[2] https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-enabled-device-software-functions. Accessed March 2026
[3] https://www.johnsnowlabs.com/john-snow-labs-closes-2024-with-record-revenue-customer-base-growth-and-open-source-adoption-thanks-to-state-of-the-art-healthcare-specific-large-language-models/.Accessed March 2026
[4] https://nlp.johnsnowlabs.com/demos. Accessed March 2026
[5] https://www.johnsnowlabs.com/peer-reviewed-papers/. Accessed March 2026
[6] https://nlp.johnsnowlabs.com/demos. Accessed March 2026
[7] https://www.johnsnowlabs.com/peer-reviewed-papers/. Accessed March 2026
[8] https://www.johnsnowlabs.com/customers/. Accessed March 2026

artificial intelligence (AI) from a technical promise into an operational advantage, combining domain-tuned performance with the scale, governance, and economics that enterprise adoption demands.[9]

The value case extends beyond de-identification. In blind physician evaluation, healthcare-specific small LLMs outperform GPT-4o by 45% to 92% across factuality, clinical relevance, and conciseness in medical summarization, clinical information extraction, and biomedical question answering. In assertion detection, a fine-tuned model reaches 0.962 overall accuracy versus 0.901 for GPT-4o, with especially large gains in categories such as hypothetical assertions.[10] These results strengthen the price-performance case because they show that John Snow Labs does not trade specialization for capability. Instead, it uses specialization to improve both task-level accuracy and the economics of deployment in regulated healthcare use cases.[11]

Turning Clinical Data into Measurable Outcomes

John Snow Labs demonstrates its impact most clearly in the downstream value of the workflows it enables. Rather than stopping at model performance, the company helps healthcare organizations convert unstructured clinical data into assets that support research, operational decision-making, and financial performance. For example, in clinical documentation, John Snow Labs presents medical LLMs used to automate Subjective, Objective, Assessment, Plan note generation, illustrating how healthcare-specific models can reduce documentation burden and turn unstructured clinical information into more usable clinical outputs.[12]

> *"John Snow Labs stands out by turning healthcare-specific AI from a technical promise into an operational advantage, combining domain-tuned performance with the scale, governance, and economics that enterprise adoption demands."*
>
> ***- Nitin Manocha, Senior Industry Analyst***

The same impact extends into research and provider economics. In pharmacoepidemiology, these capabilities support evaluation of the association between montelukast and neuropsychiatric events through the United States Food and Drug Administration Sentinel Innovation Center MOSAIC-NLP program, showing how clinical language models can accelerate evidence generation from electronic health record and claims data. In provider operations, the company also supports hierarchical condition category programs at West Virginia University, a health system with 25 hospitals, illustrating how the technology extends from research use cases into revenue-sensitive operational settings. Together, these examples demonstrate John Snow Labs' efficacy in transforming difficult unstructured healthcare data into research-grade evidence, faster analytics, and more actionable enterprise uses.[13] [14]

[9] https://www.johnsnowlabs.com/why-llm-output-alone-cannot-drive-clinical-decisions-lessons-from-production-deployments/. Accessed March 2026
[10] https://www.johnsnowlabs.com/why-llm-output-alone-cannot-drive-clinical-decisions-lessons-from-production-deployments/#:~:text=Systematic%20assessment%20on%2048%20medical,500%20novel%20clinical%20test%20cases. Accessed March 2026
[11] https://www.johnsnowlabs.com/customers/. Accessed March 2026
[12] https://www.johnsnowlabs.com/generating-soap-notes-with-ai-enhancing-clinical-documentation-efficiency-2/. Accessed March 2026
[13] https://www.johnsnowlabs.com/peer-reviewed-papers/. Accessed March 2026
[14] Frost & Sullivan Best Practices Discussion with John Snow Labs (March 2026)

Reducing Friction from Evaluation to Enterprise Use

Performance alone does not secure adoption in healthcare. Buyers also need confidence that they can evaluate a solution, understand how it behaves, and integrate it into real enterprise settings without committing to a black-box implementation. John Snow Labs lowers this friction by making its technology highly accessible at the evaluation stage. Its platform and developer ecosystem include more than 300 live demos and notebooks, with direct access to live demos, Colab notebooks, and supporting materials across use cases. This structure makes it easier for technical and business stakeholders to inspect capabilities before purchase, reducing evaluation uncertainty that often delays procurement and slows adoption in clinical settings.[15] [16]

The customer experience extends beyond initial visibility. John Snow Labs supports progression from experimentation to operational use by combining healthcare language models with supporting infrastructure, such as terminology mapping. Healthcare organizations require solutions that fit clinical, operational, and data-governance environments**.** By supporting this broader transition, John Snow Labs gives customers a clear path from evaluation to enterprise use, increasing the likelihood that promising pilots progress into governed operational deployment.[17]

As a result, the company reduces friction at several stages simultaneously. Evaluation is simplified through direct testing of concrete applications. Adoption is accelerated by aligning these applications with enterprise requirements rather than isolated demonstrations. This, in turn, enables expansion, as successful initial use cases can extend into adjacent areas on the same healthcare-oriented foundation. Because many promising pilots still fail to reach meaningful scale, this ability to move from inspection to operationalization is a meaningful customer-experience differentiator.[18]

Earning Long-Term Trust Through Expert Partnership

Long-term trust in healthcare AI depends on more than a successful initial deployment. Customers must continue to invest when a platform remains operationally relevant, supports expanding institutional needs, and proves dependable in workflows that matter over time. John Snow Labs demonstrates such durability not only through sustained use in healthcare and life sciences environments, but also through governance features that support ongoing operational trust. For example, the company introduced built-in Health Insurance Portability and Accountability Act compliant audit logging with a real-time dashboard that tracks user actions, data access, exports, project changes, and application programming interface calls, reinforcing the platform's relevance for institutions that require traceability, oversight, and accountable AI operations over time.[19] [20]

Healthcare organizations do not retain vendors only for technical promise. They retain vendors when the technology becomes embedded in processes that teams rely on repeatedly and can extend across adjacent programs. John Snow Labs' work in areas such as downstream analytics enablement, partner

[15] Frost & Sullivan Best Practices Discussion with John Snow Labs (March 2026)
[16] https://www.johnsnowlabs.com/peer-reviewed-papers/. Accessed March 2026
[17] Ibid.
[18] Ibid.
[19] https://www.johnsnowlabs.com/customers/. Accessed March 2026
[20] https://www.johnsnowlabs.com/generative-ai-lab-7-8-hipaa-audit-logging-is-now-built-in. Accessed March 2026

integration, and reproducible evaluation supports that pattern. Organizations can embed the platform into broader operating environments, reduce replacement risk, and expand use over time as institutional reliance increases.[21]

Rather than positioning support as a generic service layer, the organization helps customers operationalize, refine, and expand the technology in demanding healthcare settings. This is visible in the "Governance by Design" deployment approach with medical LLM implementations that keep protected health information always inside hospital firewalls (whether on premise or inside their cloud tenant), alongside human-in-the-loop review processes that help institutions validate, govern, and adapt outputs in regulated environments. The technical depth and workflow-level relevance creates a stronger basis for long-term trust because it allows customers to depend on the platform not only for initial deployment, but for sustained operational use and future expansion. Many AI tools still struggle to move beyond pilot status, making John Snow Labs better positioned as a platform that customers keep using because it continues to solve important problems.[22]

> *"Many healthcare AI vendors still compete on possibility, and John Snow Labs differentiates itself by showing repeatable evidence of usability, institutional relevance, and customer value at scale."*
>
> ***- Subha Krishnan,***
> ***Best Practices Research Analyst***

An Innovation Engine Built on Clinical Expertise

John Snow Labs' innovation advantage lies in its ability to repeatedly translate expertise into usable technical advances. The company built a continuing body of healthcare-specific methods, benchmarks, and evaluation infrastructure that supports both research credibility and production deployment. The leadership in healthcare AI depends less on isolated breakthroughs than on the ability to refine models, test them rigorously, and adapt them to clinical reality over time.[23]

This operating model combines speed with discipline. Blind physician review evaluates outputs for clinical relevance, factuality, and conciseness, while benchmark work measures performance across biomedical and clinical tasks that matter in practice. Evaluation tooling extends beyond model promotion and into reproducible measurement, which strengthens the company's ability to assess quality consistently as models evolve. This innovation model is also visible in LangTest, John Snow Labs' evaluation framework for ranking, comparing, and stress-testing models over time.[24] LangTest brings together historical comparison, dataset-specific insights, and robustness testing through adversarial examples, paraphrasing, and noise injection, strengthening John Snow Labs' ability to make healthcare AI evaluation more systematic, repeatable, and deployment-relevant. This combination gives John Snow Labs a more durable innovation profile because it ties model development to healthcare-specific validation, making

[21] Frost & Sullivan Best Practices Discussion with John Snow Labs (March 2026)
[22] Ibid.
[23] https://www.johnsnowlabs.com/customers/. Accessed March 2026
[24] https://www.johnsnowlabs.com/mastering-model-evaluation-introducing-the-comprehensive-ranking-leaderboard-system-in-langtest. Accessed March 2026

performance gains more credible, more repeatable, and more relevant to customer adoption than generalized scale alone.[25]

The result is a form of innovation that is cumulative rather than episodic. John Snow Labs continues to build reusable assets, evaluation methods, and workflow-enabling components that can support future model development as well as current deployments. In a market where many vendors still rely on adapting general-purpose advances after the fact, this ability to generate, measure, and operationalize healthcare-specific progress gives John Snow Labs a meaningful and lasting innovation advantage.[26] [27]

Scaling with Discipline, Expanding with Purpose

John Snow Labs has translated healthcare-specific technical depth into a broader and more durable commercial position. Its business momentum reflects more than demand for specialized models. It reflects growing relevance across enterprise priorities, expanding distribution, and a platform footprint that supports larger and more strategic customer relationships over time. More than 250 enterprise customers and 325% year-over-year growth from cloud marketplaces in 2024 point to a business that is gaining adoption and scaling through channels that increase reach and purchasing accessibility. This commercial progress carries added weight in a market where many AI vendors still struggle to convert technical interest into durable enterprise demand.[28] Many healthcare AI vendors still compete on possibility, and John Snow Labs differentiates itself by showing repeatable evidence of usability, institutional relevance, and customer value at scale.

The company's growth profile benefits from its ability to move beyond component access toward broader solution value. Instead of competing only as a model provider, John Snow Labs increasingly occupies a larger role in customer environments by supporting workflows that connect model performance to operational and analytic outcomes. This shift raises the value of each deployment, aligns more closely with executive buying priorities, and creates more room for expansion within existing accounts.[29] [30]

Distribution further strengthens this position. The company's presence on major marketplaces, including early availability of healthcare-specific LLMs on Amazon Bedrock Marketplace, supports a scalable commercial path and reinforces credibility with enterprise buyers. Combined with ongoing account expansion and profitable growth, these factors position John Snow Labs as a company that is not simply participating in healthcare AI demand but converting that demand into disciplined and increasingly strategic business growth.[31]

[25] https://nlp.johnsnowlabs.com/demos. Accessed March 2026
[26] https://www.johnsnowlabs.com/customers/. Accessed March 2026
[27] Frost & Sullivan Best Practices Discussion with John Snow Labs (March 2026)
[28] https://www.johnsnowlabs.com/customers/. Accessed March 2026
[29] https://www.johnsnowlabs.com/peer-reviewed-papers/. Accessed March 2026
[30] Frost & Sullivan Best Practices Discussion with John Snow Labs (March 2026)
[31] Ibid.

Conclusion

John Snow Labs combines healthcare-specific innovation with practical customer value, enabling organizations to work more effectively with some of the most difficult forms of healthcare data, including unstructured notes, documents, and multimodal records. Its strength lies not only in building specialized language models but in translating these capabilities into production-ready solutions that support critical healthcare and life sciences workflows. In doing so, the company addresses the market's central demands: strong accuracy in domain-specific tasks, sustainable economics at scale, safe and realistic deployment, and measurable return on investment in environments where trust, precision, and operational fit are essential.

John Snow Labs delivers customer value through healthcare-specific models that improve price-performance in regulated workflows. It delivers customer impact by transforming fragmented clinical language into usable, research-grade and operationally relevant data assets that support evidence generation, coding, decision support, and broader enterprise use. It improves the customer experience by reducing friction from evaluation through deployment and by making its capabilities easier to inspect, validate, and extend into real workflows. At the same time, it strengthens long-term market credibility through broad healthcare relevance, customer trust, peer-reviewed validation, and a proof-led brand that resonates with technical, clinical, and enterprise audiences alike.

Its leadership also reflects discipline and durability. John Snow Labs does not rely on a single product claim, one high-profile deployment, or a narrow use case to define its position. Instead, it has built an operating model that consistently converts healthcare expertise, model evaluation, and workflow understanding into scalable, usable solutions for the market.

For its specialization, execution, measurable customer relevance, and long-term strategic fit, John Snow Labs is presented with Frost & Sullivan's 2026 North American Customer Value Leadership Recognition in the healthcare large language model industry.

What You Need to Know about the Customer Value Leadership Recognition

Frost & Sullivan's Customer Value Leadership Recognition identifies the company that offers products or services customers find superior for the overall price, performance, and quality.

Best Practices Recognition Analysis

For the Customer Value Leadership Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

Business Impact

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Leveraging innovative technology characterizes the company culture, which enhances employee morale and retention

Customer Impact

Price/Performance Value: Products or services offer the best ROI and superior value compared to similar market offerings

Customer Purchase Experience: Purchase experience with minimal friction and high transparency assures customers that they are buying the optimal solution to address both their needs and constraints

Customer Ownership Excellence: Products and solutions evolve continuously in sync with the customers' own growth journeys, engendering pride of ownership and enhanced customer experience

Customer Service Experience: Customer service is readily accessible and stress-free, and delivered with high quality, high availability, and fast response time

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty, which is regularly measured and confirmed through a high Net Promoter Score®

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

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Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fueled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)