FROST & SULLIVAN

ICOMETRIX

2022 TECHNOLOGY INNOVATION LEADER

Global Neurological Disorders Artificial Intelligence Algorithms Industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each Award category before determining the final Award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. icometrix excels in many of the criteria in the neurological disorders artificial intelligence algorithms space.

Neurological Disorders Market Overview

About one-third of the global population is likely to suffer from a neurological disorder in their lifetime, with the number of dementia cases expected to quadruple in the next 30 years.[1] The United States (US) spends $800 billion annually on neurological disorders-associated costs, with each multiple sclerosis (MS) patient spending $4 million in total lifetime healthcare expenses.[2]

One of the main reasons for these high expenditures is the lack of a data-driven approach. The drug development process for an MS or Alzheimer's disease (AD) drug takes, on average, about 38% longer than other drugs, translating into additional costs.[3] Further, only about 6% of neurological drugs that enter Food and Drug Administration (FDA) phase-I trials make it to the market.[4] Additionally, patients are diagnosed too late to receive optimal treatment or spend too long on the wrong therapy, leading to poor outcomes. Therefore, a data-driven precision medicine approach is imperative in the neurological disorders space. icometrix uniquely leverages its technology to meet patients' needs. Frost & Sullivan's research suggests that the company is well-positioned to capitalize on new growth opportunities, cementing its leadership in the neurological disorders artificial intelligence (AI) industry.

[1] Feigin VL, Vos T, Nichols E, et al. The global burden of neurological disorders: translating evidence into policy. *Lancet Neurol.* 2020; 19 (3):255-265.
[2] Ibid.
[3] Kaitlin KI. CNS drugs take longer to develop, have lower success rates, than other drugs. In: Kaitin KI, editor. *Tufts CSDD Impact Reports.* Vol. 16. Tufts University, Tufts Center for the Study of Drug Development; 2014. pp. 1–4.
[4] Ibid.

Technology Sparked by a Commitment to Make an Impact

Founded in 2011 and headquartered in Leuven, Belgium, icometrix is a medical device manufacturer offering AI solutions to tackle neurological disorders market challenges through personalized patient care and data-driven insights. The company is a spin-off from both the University of Antwerp and Leuven in Belgium. It supports most of the top pharmaceutical (pharma) companies in central nervous system drug development, e.g., MS, AD, Parkinson's disease, dementia, stroke, epilepsy, traumatic brain injury (TBI), and concussion, via real-world-evidence, phase I-III studies, and biomarker studies. icometrix caters to patients with MS, AD, dementia, stroke, epilepsy, and brain trauma in over 100 clinical practices worldwide. The company recognizes unmet client needs and ensures it develops solutions that meet customers' requirements and market demands using extensive research and development (R&D) to offer innovative solutions.

Committed to R&D, icometrix focuses on generating evidence to create clinical, operational, and economic impact. One of its core values is "crazitivity," a combination of being crazy and creative. Its flat hierarchy structure allows employees to present a novel, out-of-the-box ideas during monthly demonstration meetings. The company also organizes hackathons regularly to foster creativity and drive innovation. Essentially, R&D and evidence generation are icometrix's backbone.

In the current market, the principal analytical method for diagnosing and understanding disease progression in neurological disorders is magnetic resonance imaging (MRI). However, a staggering 24% of MRI reports have errors.[5] Moreover, radiologists' interpretations are subjective and do not involve any measurements or quantitation, increasing the chance for mistakes. Therefore, improving MRI results is quite critical.

icometrix offers icobrain, a cloud-based AI solution quantifying disease-specific brain structures on MRI and computed tomography (CT). icobrain is a secure service that reliably measures volumes and volume changes of several brain structures, as well as brain lesions and abnormalities. It is easy to integrate into any center without altering workflow or scan times.

icobrain Solution Portfolio

FDA-approved and Conformitè Europëenne (CE)-marked, the icobrain portfolio covers several neurological disorders for CT and MRI:

- **icobrain ms:** Used in conjunction with MS patients' MRIs, icobrain ms assesses lesion dissemination objectively. It detects, quantifies, and tracks FLAIR white matter hyperintensities evolution, T1 white matter hypointensities, and contrast-enhancing T1 hyperintensities to evaluate disease activity. It also reports the FLAIR lesion distribution. The software tracks annualized brain volume changes for gray matter and the whole brain to assess disease progression. It compares brain volumes and volume changes to an age- and sex-matched normative reference population to provide specific and relevant brain volume change metrics.[6]

[5] Andrew B. Rosenkrantz et al., "Discrepancy Rates and Clinical Impact of Imaging Secondary Interpretations: A Systematic Review and Meta-Analysis," Journal of the American College of Radiology 15, no. 9 (September 2018): pp. 1222-1231, https://doi.org/10.1016/j.jacr.2018.05.037.
[6] icometrix, "icobrain ms Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-ms.

- **icobrain dm:** Used with MRIs for dementia patients, icobrain dm detects abnormality patterns. It reports sensitive brain volumetrics for early disease detection causing dementia. It quantifies and tracks cortical brain volumes and asymmetries to help diagnose the most common dementia types. The software also compares volumes and volume changes to an age- and sex-matched normative reference population.[7]
- **icobrain tbi:** The software assists CT scans of TBI patients uncover mass effects. Some icobrain tbi functions include: detecting, quantifying, and classifying hyperdensities, assessing ventricular asymmetry and the ventricular and cisternal cerebrospinal fluid spaces (CSF), measuring midline shift, visualizing CSF space patterns, and comparing volumes to an age- and sex-matched normative reference population.[8]
- **icobrain ep:** icobrain ep for MRIs of epileptic patients uncovers abnormality patterns by comparing hippocampal asymmetry and volumes and volume changes to age- and sex-matched normative populations and assessing juxtacortical abnormalities indicating cortical malformations.[9]
- **icobrain cva:** This software works with CT scans of cerebral vascular accident patients to assess tissue perfusion quantitatively. It quantifies Tmax and cerebral blood flow abnormality with the mismatch volume and ratio. It also generates a graph with information on the quality of the report and the correctness of the selected arterial input function. Finally, it also provides insights into the tissue's perfusion state through perfusion maps.[10]

icometrix's recent microsimulation study evaluated the use of assistive MRI software (such as icobrain ms) to assess disease activity and progression in MS and its impact on the number of treatment switches. The study demonstrated that sensitive MRI analysis solutions lead to up to 40% more treatment changes. Ultimately, this early disease activity and progression detection, along with related adjustments to more effective therapies, significantly improve patient outcomes and save healthcare system expenditures. The company estimates this technological advancement to save about $1,700 to $2,000 per patient per year. [11]

icometrix is also working closely with payers to develop the evidence for reimbursement of the technology, which is key to large-scale adoption and, in turn, the patient and healthcare system impact. Indeed, the company recently achieved two major landmarks in the United Kingdom (UK), a Medtech Innovation Briefing from National Institute for Care and Excellence[12] and the AI in Health and Care Award from NHSX. This National Health Service award will fund a UK study and provide real-world evidence of the clinical impact of improved disease detection with icobrain.

[7] icometrix, "icobrain dm Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-dm.
[8] icometrix, "icobrain tbi Report for CT," icometrix, 2022, https://icometrix.com/services/icobrain-tbi.
[9] icometrix, "icobrain ep Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-ep.
[10] icometrix, "icobrain dm Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-dm.
[11] Diana M. Sima et al., "Health Economic Impact of Software-Assisted Brain MRI on Therapeutic Decision-Making and Outcomes of Relapsing-Remitting Multiple Sclerosis Patients—a Microsimulation Study," Brain Sciences 11, no. 12 (November 27, 2021): pp. 1570-1588, https://doi.org/10.3390/brainsci11121570.
[12] icometrix, "icometrix's MRI Measures for PwMS Receive MIB from NICE," icometrix, April 21, 2022, https://icometrix.com/news/icometrix%E2%80%99s-mri-measures-for-pwms-receive-mib-from-nice.

icompanion

icometrix offers icompanion for MS patients, a secure and simple application to track symptoms, treatments, and physician visits.

Studies report that doctors and patients can miss up to 50% of disease flares or relapses.[13] Available on both iPhone and Android, icompanion is an FDA- and CE-cleared medical device available in six languages. It enables patients to record their symptoms and make notes to share with healthcare providers for a holistic disease perspective to drive optimal treatment. It also provides treatment reminders and educational material so caregivers can understand the patient's condition. Together with icobrain, icompanion enables icometrix to collect real-world data to build on its technology and pave a path for predictive models.

Frost & Sullivan is highly impressed with icometrix's approach to driving a meaningful impact through real-world-based evidence generation and believes that its diverse offerings portfolio is on its way to revolutionizing the neurological disorders market.

Strategic Practices Promote Successful Operations

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>
> ***- Ojaswi Rana,***
> ***Best Practices Research Analyst***

icometrix has a proven track record. One of its strategies involves creating local channel partnerships in different geographies. The company enters new markets in Japan, India, Sub-Saharan Africa, the Middle East, and South America by utilizing local partners that assess market opportunities, enabling it to move across markets efficiently. For example, initially, icometrix had an office only in Belgium and was operating in the US through channel partners. However, when the business significantly picked up, it set up an office in the US. Therefore, this scalable model has boosted the company's commercialization success.

In April 2018, icometrix signed a seven-year contract with a top pharma company to quantify real-world MRI in MS at 10 global clinical sites.[14] At the same time, it also received approvals in Japan, Australia, Brazil, India, and Canada for icobrain.[15] The company's proprietary software has become quite popular amongst neurologists and radiologists.

[13] Duddy et al, Experience of Relapse in Multiple Sclerosis Treated with First Disease Modifying Therapies," Multiple Sclerosis and Related Disorders 3, no. 4 (July 2014): pp. 450-456, https://doi.org/10.1016/j.msard.2014.02.006.
[14] icometrix, "Seven Year Contract with Top 10 Pharmaceutical Company to Quantify Real World MRI in Multiple Sclerosis," icometrix, April 8, 2018, https://icometrix.com/news/seven-year-contract-with-top-10-pharmaceutical-company-to-quantify-real-world-mri-in-multiple-sclerosis.
[15] icometrix, "New Approvals in America and Asia Expand the Reach of the Clinical icobrain Reports," icometrix, April 14, 2018, https://icometrix.com/news/new-approvals-in-america-and-asia-expand-the-reach-of-the-clinical-icobrain-reports.

"icobrain has been a really valuable addition to our clinical practice as patients can conceptually understand much better what we are looking for in their brain scans."

- Jeffrey Dunn, MD, MS Neurologist[16]

"I feel like icobrain's AI is better at diagnosing hippocampal loss compared to visual rating. Whilst with the volumetric report, we clearly see a hippocampal loss, we could not identify this by visual assessment (MTA-score)."

- Geoffrey De Roeck, MD Radiologist at AZ Herentals[17]

Even though not part of its core business, towards the onset of the COVID-19 pandemic, icometrix collaborated with universities, other hospitals, and organizations to develop icolung, an AI algorithm offering quick and objective lung pathology quantification of chest CT scans for COVID-19 patients. In April 2020, it became the first CE-marked AI solution for COVID-19, much faster than specialized lung AI companies, demonstrating its unique ability to develop and scale AI solutions to benefit patients.[18] Making a significant impact on COVID-19 triage cases, icolung witnessed wide adoption.

Frost & Sullivan anticipates rapid, widespread technology adoption for icometrix's AI algorithms and commends the company's strategic practices that promote successful operations.

Customer Acquisition and Retention Strategies Drive Company Growth

icometrix works closely with customers during the pre- and post-purchase journey, offering support and guidance to become embedded in the care path of MS and other neurological disorders. Its customer success team supports clients in their clinical workflow use of the company's product. icometrix continually demonstrates its offerings' value based on a subscription model, updating the product and streamlining its use to retain clients.

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The company acquires new customers by working closely with healthcare providers (principally radiologists and neurologists) to demonstrate the value of their workflow and improved patient outcomes. It is also working towards entering value-based arrangements (a strategic collaboration between payers, pharmaceutical companies, and icometrix to target the right patients with the most optimal treatment and cost savings for society). Since AI in healthcare is still an emerging market, delivering value is imperative for customer acquisition. Therefore, education is an essential component. icometrix publishes thought leadership articles, scientific data, and evidence about its platform[19] and regularly participates in conferences.

[16] icometrix, "icobrain ms Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-ms.
[17] icometrix, "icobrain dm Report for MRI," icometrix, 2022, https://icometrix.com/services/icobrain-dm.
[18] icometrix, "icolung for Chest CT in COVID-19 Receives CE-Marking," icometrix, April 23, 2020, https://icometrix.com/news/icolung-for-chest-ct-in-covid19-receives-cemarking.
[19] Wim Van Hecke et al., "A Novel Digital Care Management Platform to Monitor Clinical and Subclinical Disease Activity in Multiple Sclerosis," Brain Sciences 11, no. 9 (September 3, 2021): pp. 1171-1195, https://doi.org/10.3390/brainsci11091171.

Unlike other competing AI companies in the space, Frost & Sullivan appreciates how icometrix prides in translating its AI to transform healthcare. The company prioritizes patient-centricity and economic impact and brings all of the relevant stakeholders (pharma, payers, and providers) together as an ecosystem to attain the best outcomes for patients and unmatched economic value for society and the overall population health.

While most of its business is in Europe, Israel, and the US, icometrix is confident that it is headed towards significant growth - especially since its technology enables radiologists finalize 40% more radiological reports on average per day.[20] In May 2019, the company raised $18 million in funding from Forestay Capital, Optum Ventures, Capricorn Venture Partners, and Heran Partners to accelerate the development of brain imaging AI solutions.[21]

icometrix achieved solid year-on-year (YOY) growth in its pharma business and the healthcare clinical segments since its inception in 2016. It reports an incredible 40% YOY growth in revenues from clinical products and a doubling in the total active customer base every year from 2019 to 2021.[22] Between 2019 and 2021, the company processed more than 115,000 scans.[23] Moreover, it reports a 50% increase in employees in 2021 since 2019.[24]

Over the years, icometrix has partnered with prominent organizations, including Guerbert (European Union (EU) and the US), Micron Inc. (Japan), Affidea (Europe), Siemens Healthineers (EU and US), the European Health Data and Evidence Network, Upcare Partners & Associates (Canada), Aidoc Medical (Israel), and Invicro (US). It also has several strategic collaborations with the top 10 pharmaceutical companies. Frost & Sullivan firmly believes that the company's impressive growth momentum and trajectory are a testament to its technology innovation leadership, earning its clients' trust and loyalty and enabling it to capture market share.

Conclusion

Technology is a critical success factor for the neurological disorders artificial intelligence (AI) algorithms industry. Yet with many options available, Frost & Sullivan points out that market stakeholders need to leverage the most appropriate and best technology-based solutions to optimize their market impact.

With its icobrain AI, icometrix delivers reliable measurements, enhancing current imaging technology. Frost & Sullivan recognizes how the company stands out from other competitors based on its commitment to innovation and creativity while achieving commercial success. Generating evidence for its AI technology impact and nurturing innovation in every step, icometrix properly demonstrates promising growth worldwide.

With its strong overall performance, icometrix earns the 2022 Frost & Sullivan Global Technology Innovation Leadership Award in the neurological disorders artificial intelligence algorithms industry.

[20] Interview with icometrix, 8th April 2022.
[21] Robin Wauters, "Belgium's icometrix Raises $18 Million to Boost Development of Its Brain Imaging AI Solutions," Tech.eu, May 14, 2022, https://tech.eu/2019/05/14/belgiums-icometrix-raises-18-million-to-boost-development-of-its-brain-imaging-ai-solutions/.
[22] Interview with icometrix, 8th April 2022.
[23] Ibid.
[24] Ibid.

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, 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: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

About Frost & Sullivan

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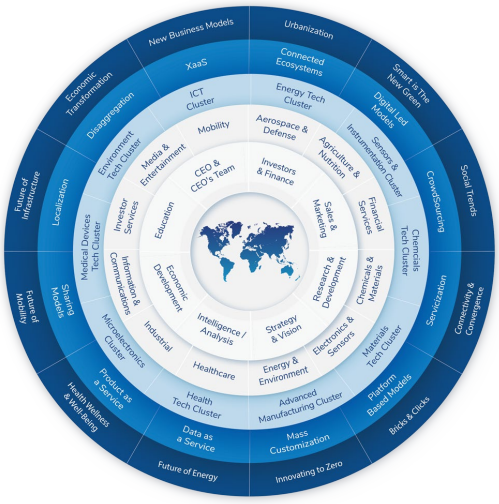
- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

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:

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