



COTA Healthcare Recognized for

2021

Enabling Technology Leadership

North American Real World
Evidence Solutions Industry
Excellence in Best Practices

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. COTA Healthcare excels in many of the criteria in the RWE solutions space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Customer Impact</i>
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

A Technical Research Challenge: High-quality, Standardized, Regulatory-grade Real-world Evidence

Researchers across the life science industry utilize real-world evidence (RWE) techniques to increase the breadth of addressable queries, accelerate research, and garner faster approvals.

The clinical-genomic database allows conducting outcomes studies in biomarker-defined populations, discover novel targets, and design patient-centric clinical trials. However, RWE data across organizations is highly fragmented, and registries lack granularity. Hence, a scientific challenge is to access high-quality, regulatory-grade RWE to develop innovative techniques (external control arm (ECA) and interventions arm) to bring new treatment options to patients. Clinical trial sponsors struggle in harnessing detailed, accurate, diverse data sets with the right patient mix to design a viable ECA for a clinical trial. Biorepositories provide access to carefully annotated samples, including a range of assay materials and detailed metadata. However, standardizing data content, format, and clinical definitions to unlock the value of electronic health record (EHR) and electronic medical record (EMR) data is vital. Regulatory concerns in accepting real-world data (RWD) as an integral part of the research process create bottlenecks in RWD adoption by trial sponsors. Finally, data privacy regulation concerns, patient-level authorization, and ongoing patient consent management for evidence still exist. Forging strategic partnerships is essential to enabling sharing data and expertise to accelerate clinical development programs. Advanced technologies such as artificial intelligence (AI) and natural language processing (NLP) can automate RWDs workflow from data retrieval to analysis.

Regulatory-grade Oncology RWD through Technology-enabled Human Abstraction Technique

Founded by oncologists, engineers, and data scientists in 2011 and headquartered in Boston, Massachusetts, COTA Healthcare (COTA) is a world-class HemOnc RWD solution provider for biopharmaceutical companies, the research community, and healthcare provider organizations. Committed to designing a precise, patient-first approach to cancer care, COTA is unique in providing RWD, advanced analytics, and deep technical expertise spanning the entire RWD technology and services continuum.

The medical-first company curates fit-for-purpose, regulatory-grade oncology RWD and analytics that caters across the drug development and commercialization lifecycle. It enables researchers to visualize cancer holistically, advancing clinical development programs to improve outcomes and, consequently, allowing patients to live longer and healthier lives.

COTA uniquely merges its oncology expertise with technology-enabled human data abstraction techniques, offering the highest fidelity in the industry. Process automation techniques help human-enabled curation of meaningful, longitudinal, and de-identified clinically relevant patient data and analytics, focusing on the patient journey. Machine learning (ML) algorithms augment process efficiency in the one-of-a-kind manual curation process that applies medical logic to offer best-in-breed curation depth. ML also helps calculating standard metrics in the data, while NLP and deep learning models render best-in-class statistical methodologies. Extensive quality analysis and quality check allow standard-level data elements to go deeper than traditional sources. The company's proprietary technologies started on the cloud right from the beginning, making it scalable. Its purpose-built infrastructure designs the clinical data model that deepens every time COTA pivots on improving it without replicating other technologies.

The company accesses multiple healthcare providers' EMR and EHR across the US; it covers academic and community cancer programs and publically available and proprietary databases, including diagnostics, imaging, pharmacy, and financials data, ensuring the highest level of patient privacy. COTA has access to 1.5 million cancer lives records. EHR and EMR agnostic, the company's record sources mix originate from 60% academic and 40% community sites.

"COTA uniquely merges its oncology expertise with technology-enabled human data abstraction techniques, offering the highest fidelity in the industry. Process automation techniques help human-enabled curation of meaningful, longitudinal, and de-identified clinically relevant patient data and analytics, focusing on the patient journey."

- Amol Jadhav, Senior Industry Analyst

COTA's strategy is to build data assets in the hematology-oncology space; however, it also focuses on solid tumors (breast and prostate cancer research). Active in nearly 20 cancer types, the company has a broad customer segment and collaborations redefining RWD-based drug development and accelerating value-based care models. Eight of the top ten biopharmaceutical companies leverage COTA's data across several cancer indications to create cohorts currently in regulatory submissions and outcomes studies. Presently, ten plus regulatory filings

use COTA's RWD; this includes two approved Food & Drug Administration (FDA) submissions for diffuse large B cell lymphoma and multiple myeloma.

RWD-based Patient-centric Clinical Trial Health Economics and Outcomes Research

Primarily focused on the hematology-oncology space, COTA provides comprehensive and diverse cancer RWD and strategically partners with leading pharma and biopharma companies to support treatment discovery. The varied RWD data contains detailed demographic, pathologic, genomic, treatment, and outcomes information based on cancer types.

The company's RWD product offering for life sciences includes two product lines: focus and vantage groupings. The focus grouping, with standard-level data, refreshes at the desired frequency and provides custom cohorts for specific use cases such as external and hybrid control arms.

“With access to over one million patient data records, the company supports identifying, profiling, and enrolling the most accurate target patient population for clinical trials with increasing patient diversity. By optimizing patient-centric trial design, the company assists in early drug development, and abridges trials to lessen patient's burden. COTA RWE also supports clients having already approved drugs to extend across other indications by replacing the traditional standard-of-care or placebo group via an RWD-powered synthetic control arm.”

- Supriya Lala, Best Practices Research Analyst

The vantage product line offers the deepest level of curation, with standard-level data elements, and is usable for health economics and outcomes research (HEOR). It includes a larger patient group, adds new patients on quarterly data refresh, and offers various hematology and oncology indications (COTA potentially plans on building other indications in its solution).

COTA's customized RWD data sets deliver extensive customer value by empowering life science organizations to quicken their pipeline-related decisions and conduct commercial assessments. With access to over one million patient data records, the company supports identifying, profiling, and enrolling the most accurate target patient population for clinical trials with increasing patient diversity. By optimizing

patient-centric trial design, the company assists in early drug development and abridges trials to lessen patient's burden. COTA RWE also supports clients having already approved drugs to extend across other indications by replacing the traditional standard-of-care or placebo group via an RWD-powered synthetic control arm.

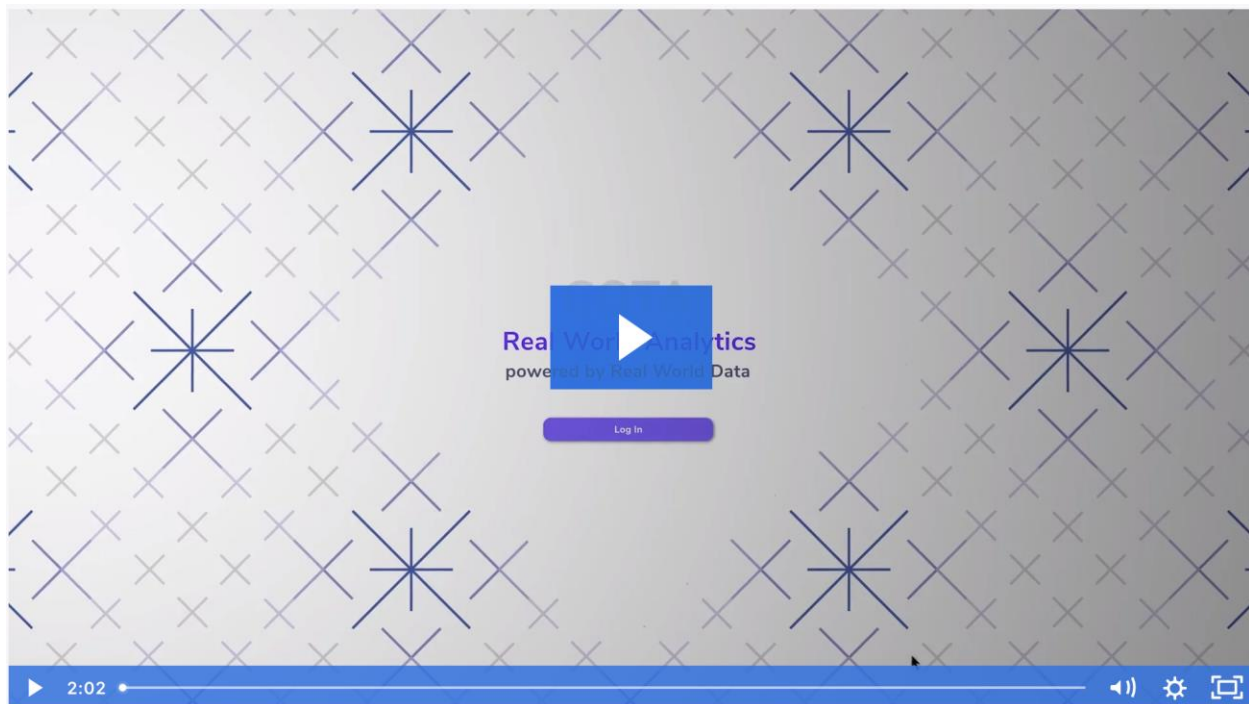
<p>FOCUS Fit for purpose RWD Cohorts</p> <table border="0"> <tr> <td> <p>CORE Standard data elements</p> </td> <td> <p>CUSTOM Core + Custom complexity* data elements</p> </td> <td> <p>CONTINUOUS Core/Custom + Refresh at desired frequency</p> </td> </tr> </table>			<p>CORE Standard data elements</p>	<p>CUSTOM Core + Custom complexity* data elements</p>	<p>CONTINUOUS Core/Custom + Refresh at desired frequency</p>	<p>VANTAGE Disease Based RWD Populations</p> <ul style="list-style-type: none"> + Multimodal applications + Core (standard) data elements + Complete data refreshed quarterly + Additional patients added with refresh
<p>CORE Standard data elements</p>	<p>CUSTOM Core + Custom complexity* data elements</p>	<p>CONTINUOUS Core/Custom + Refresh at desired frequency</p>				
<p><small>STANDARD: Data elements defined by our medical team and key industry opinion leaders. Includes demographics, diagnostics, performance status, molecular markers, labs, treatments, and outcomes.</small></p> <p><small>*Complexity based on ability to define, curate, and deliver; can include additional biomarkers, labs, imaging, pathology, and more.</small></p>						

The company collaborates closely with regulatory bodies and trial sponsors, ensuring high-quality data is available for control and comparator arms and continuously improves processes based on feedback supporting ECA-enabled research. For instance, Kite, a Gilead company, utilizes its data to inform decisions about future therapeutic applications for blood cancers and suggest new techniques to design clinical trials. COTA's data also supports establishing treatment effectiveness, tracking safety and adverse events, and maintaining pharmacovigilance. Additionally, the company provides its life science clients with cohorts and analytics services and consults them on best practices, clinical trial feasibility studies, organizational solutions, and technology use.

An emerging use case of COTA's data in the HEOR and commercial space relates to the patient journey. As it designs patient stories, pharmaceutical companies can utilize its enterprise-licensable data set to map patient journey, otherwise relatively difficult, at an early phase for the hematology studies.

RWD Utility Optimization for Providers and Payors Improves Care Outcomes

COTA's data curation and robust oncology analytics solution assist healthcare providers and cancer centers in understanding fragmented and incomplete EHR data. Its Real-world Analytics solution (RWA) helps clinicians and researchers answer complex questions and gain insight into their institution's patient population, treatment patterns, and disease outcomes to bring clarity to cancer care. Several hospital systems leverage COTA's holistic data to showcase information across patient-level, macro-, micro-level trends, and outliers. The easy-to-use, point-and-click RWA platform enables analyzing and researching the data.



Video link: <https://cotahealthcare.wistia.com/medias/1j19z5dmz4>

"The goal is to standardize care. Standardization is essential to patient safety and the control of costs. COTA's unique capabilities and partnership model enable us, for the first time, to monitor this standardization efficiently."

- Leonard Alan Kalman, MD, Executive Deputy Director and Chief Medical Officer, Miami Cancer Institute at Baptist Health South Florida

Customer-centric, the company focuses on customized data showcasing. COTA's RWA platform offers customization in design and metrics based on the provider's unique requirements, leading to a heightened customer experience. Notably, MedStar Health, the largest healthcare provider in the Maryland-Washington, DC, region, partners with COTA to leverage deep clinical RWD to bolster and accelerate scientific discovery and improve cancer care. In addition, it partners with world-renowned organizations such as the Miami Cancer Institute, Bristol Myers Squibb, University of Chicago, Multiple Myeloma Research Foundation, and the Friends of Cancer Research (Friends) to research its robust data. Earlier, in 2018, the company's collaboration with nine other data partners, the FDA, and the National Cancer Institute in the Pilot 2.0 project aimed to garner RWE to support non-small cell lung cancer study and establish RWD best practices for standardization, improving RWE visibility and value. The RWE Pilot 2.0 successfully demonstrated the benefit from immuno-oncology treatment in the real world is similar to clinical trial outcomes. The Friends-led collaborative oncology model later allowed rapid responses to the coronavirus (COVID-19) pandemic to generate real-time insights. In May 2020, the company's partnership with Friends, the Reagan-Udall Foundation for the FDA, and other data partners in the COVID-19 Evidence Accelerator helped industry stakeholders share knowledge about the evolving COVID-19 pandemic and determining RWD utility in providing real-time insights. To that end, results from the first parallel analysis describing RWD use for a study on hydroxychloroquine usage with or without Azithromycin among hospitalized COVID-19 patients were published in March 2021.

The patented COTA nodal address (CNA), a digital classification methodology, defines patients' unique journeys to potentially enabling and fast-track value-based care programs. The company supports payors' decision-making by providing a population-based view of specific cancer care delivery. It helps to identify inaccurate care variations that might impact outcome quality and increase care costs. The information allows payors to design and execute efficient value-based programs such as medical home models, bundled and episode payments, and shared-risk arrangements. COTA-specific data type aims to support life science companies taking value-based contracting who can work with payors to design treatments options for value-based care.

Data Standardization Frameworks Maximize Utility and RWD Adoption

Supporting RWD adoption in research, COTA bolsters the development and adoption of data standards to maximize RWD utility. The company uses HemOnc's standardized codes to consolidate the entire healthcare ecosystem and improve seamless RWD sharing. The codes signify treatment regimens in COTA's data. Hence, the company supports RWD integration with clinical decision support tools and technologies, enabling providers to flexibly, accurately, and consistently report their treatment choices.

COTA can organize and translate data from multiple sources into a common standardized format for analytics with the OMOP Common Data Model. It aims to continually refine and develop the common

data model by working closely with OMOP, sharing its high-end expertise to standardize the resource for the scientific community. The company also commits to remain agile and incorporate flexibility in data ingestion and analysis. To that end, it utilizes Wolter Kluwer's Health Language. The analytics toolkit helps companies to leverage data to measure performance, stay interoperable, and achieve goals. Using Health language enables COTA to normalize clinical and claims data, standardizes ontologies, and manages ICD-10 code updates.

Frost & Sullivan concurs that using the standard frameworks and techniques for extracting, curating, and sharing data boost COTA's RWD expertise and advances usage for life science research.

Growth Ahead

A relationship-based company, COTA conducts internal surveys, compares metrics and customer feedback loops to bolster customer relationships. Specific teams with specialized skills manage feedback loops with provider organizations and life science partners and offer customized solutions, ensuring best-in-class customer service and high customer retention. The teams interconnect to share knowledge, learnings, and improve organizational-level process efficiencies.

The company plans to broaden its provider base beyond the US, heighten value delivery, and widen patient records, currently focused in the US. Additionally, it plans to expand in Europe and Asia (India) over the next two years. With several funding rounds, COTA's revenue-generating model includes life science company projects, analytics and research businesses, and providers. The company has partnered with Varian Medical Systems, a leading radiation oncology treatments and software provider that made a \$20 million investment. Through the collaboration, Varian will provide COTA's oncology RWA and data curation services to its customers to harness meaningful insight from fragmented EMR data. Simultaneously COTA will help Varian utilize RWD to create better Intelligent Cancer Care™ tools for decision support. It supports Varian in building a technology ecosystem connecting clinicians and patients into a global, continuously learning system to improve outcomes. Furthermore, as Varian is part of Siemens Healthineers, COTA will leverage the association and combine technologies to data and insights.

On an upward rising growth curve, the company's collaborations with the FDA and several advocacy groups are growing in scope and project numbers, with COTA becoming their trusted partner. Further, by increasing its provider base partnerships, the company will quadruple its patient records by 2021-end and expects to replicate the same expansion over the next 18 months with more significant new alliances. Compared to 2020, it added 15 new life science partners to co-innovate technology, benefiting the joint ventures and the ecosystem. Working with the top 20 pharmaceutical companies, COTA expects the relationship and revenue to grow exponentially.

Conclusion

COTA Healthcare (COTA) provides high-quality, extensive oncology real-world data (RWD) and analytics with manual abstraction techniques to curate meaningful, longitudinal, and de-identified datasets, aided by its technologies and deep oncology expertise. COTA is unique in being a medical-first and logic-focused company and is agnostic to its data sources such as electronic medical and health records from leading academic and community-based cancer centers and advanced analytics platforms.

The customer-centric company has extreme flexibility around exploring, creating, and co-innovating with its client-partners. It supports healthcare provider organizations, life sciences companies, and payors via RWD access to design a patient-first approach for cancer care. It helps life science partners with customized cohorts, creating patient-centric clinical trials and synthetic control arms to simplify trials and support oncology health economics and outcomes research. COTA RWD enables providers to receive intuitive insight into their organization's patient population, treatment patterns, and disease outcomes to improve cancer care and health outcomes.

For its strong overall performance, COTA Healthcare is recognized with Frost & Sullivan's 2021 North American Enabling Technology Leadership Award in the real-world evidence solutions industry.

What You Need to Know about the Enabling Technology Leadership Recognition

Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

Best Practices Award Analysis

For the Enabling Technology 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

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

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 Engine™

Frost & Sullivan's proprietary model to systematically create on-going growth opportunities and strategies for our clients is fuelled 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 six 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)**

