

F R O S T & S U L L I V A N

NORTHWEST ANALYTICS

2022
TECHNOLOGY
INNOVATION
LEADER

*NORTH AMERICAN MANUFACTURING
ANALYTICS FOR INDUSTRY 4.0 AND
DIGITAL TRANSFORMATION MARKET*

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. Northwest Analytics (NWA) excels in many of the criteria in the manufacturing analytics space for Industry 4.0 and digital transformation.

| AWARD CRITERIA | |
|----------------------------|------------------------|
| <i>Technology Leverage</i> | <i>Business Impact</i> |
| Commitment to Innovation | Financial Performance |
| Commitment to Creativity | Customer Acquisition |
| Stage Gate Efficiency | Operational Efficiency |
| Commercialization Success | Growth Potential |
| Application Diversity | Human Capital |

Commitment to Innovation, Creativity, and Application Diversity

Manufacturing companies aiming to achieve operational excellence and accelerate their digital transformation and Industry 4.0 programs are challenged by institutional knowledge losses and widening

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**- Sankara Narayanan,
Industry Principal**

skills gaps arising from employee retirements and resignations. Retiring and resigning employees take some of their specialized knowledge of a manufacturing process with them even in the best executed handovers. Ensuring new hires learn the skills of the trade and become productive quickly can also be challenging. Frost & Sullivan notes that the need to prevent the loss of institutional knowledge, reduce skills gaps, and improve new hires’ time to productivity is more critical than ever.

Amid this scenario emerges Portland-based Northwest Analytics, the leading provider of analytics-based knowledge solutions for global manufacturers

spanning nearly every industry vertical, including chemical, pharmaceutical, electronic materials, and others. Innovative industrial analytics solutions from NWA address some of the most critical operational

challenges manufactures face. With more than 4 decades of experience in the industrial analytics solutions space, NWA continues to help manufacturers identify, codify, and amplify their process data utilizing solutions that are not only easy to use, but easy to understand. Over the years, the company has progressed tremendously and delivered innovative analytics solutions consistently. In 2013, it was at the forefront of transitioning to real-time analytics and getting valuable insights into the manufacturing process. Based on conversations with customers and market observations, NWA determined one analytics approach simply would not suffice - and that a combination of multiple analytics approaches is required. Positioning itself as the go-to vendor for manufacturing analytics, NWA started providing third-party machine learning analytics capabilities in 2015. In 2018, it operationalized real-time manufacturing analytics. In 2020, it expanded its third-party analytics options to provide customers with even more ways to apply analytics and generate value. To this end, Frost & Sullivan is impressed with how NWA has progressed as an organization, growing from a descriptive and diagnostic analytics provider to a predictive and prescriptive analytics provider.

NWA recognizes manufacturing customers' desire for additional features in their analytics solutions, beyond receiving initial signals to retaining and sharing process knowledge across enterprises for operational excellence. For example, customers want insights into the decisions made to address issues, how these decisions were achieved, and the thought process behind the decision-making (how they go from simple, early warnings to operating the plant the right away). They require their analytics solutions to capture knowledge, use it, and make it accessible to everyone. NWA has pioneered operationalizing real-time manufacturing analytics, but the company needed to move beyond generating early-warning signals to making the analytics-based knowledge accessible for immediate and consistent issue resolution. To this end, the company launched the NWA Analytics Knowledge Suite™ in March 2022. This innovative industrial analytics solution identifies early-warning process signals, codifies institutional knowledge, and amplifies process knowledge across the enterprise. It retains relevant information generated from responding to analytics signals, capturing all knowledge related to issue resolution and making it available throughout the enterprise to solve issues faster. The NWA Analytics Knowledge Suite enables multiple analytics methodologies and adopts a prescriptive approach to help users respond to challenges and issues with specific actions. The NWA Analytics Knowledge Suite™ comprises NWA Focus EMI®, NWA Quality Analyst®, and NWA KnowledgeBase®.

NWA Focus EMI provides real-time process notifications and role-based visualizations based on native univariate and multivariate analytics to 3rd-party analytics solutions (e.g., Infometrix, Sartorius). It delivers operational guidance by providing analytics-based early-warning signals and visualizations to engineers, corporate and operators, connected directly to internal subject matter expertise, enabling them to take fast, decisive, and consistent corrective action for process deviations. The operational guidance can be a decision tree assisting users in working through issues based on a straight-forward yes-or-no approach, videos or other documents allowing them to maintain consistency between shifts and plans and the way users deal with a particular issue. NWA Quality Analyst provides a comprehensive range of univariate, multivariate, and statistical process control-charting capabilities, including stability analytics, to streamline problem-solving. NWA KnowledgeBase enables manufacturers to capture, accumulate, and disseminate process knowledge related to analytics-based early warning signals across the enterprise.

Available across the organization to corporate, process engineers, etc. to perform their jobs better, NWA KnowledgeBase is of particular value when an operator cannot resolve an issue even after adhering to standard procedures. Operators can search the NWA KnowledgeBase for guidance through any situation using its smart search technology. For instance, operators can go to the cause and action sections, click on the search button, and look up the database for similar or relevant past process incidents (whether last year or last month) by using keywords and specifying dates and times. The NWA KnowledgeBase returns all results matching the entered text and search criteria and delivers useful information to the operator, including the resolutions taken. Operators can see all data points, read an event summary, pull up a snapshot of the control chart to help in their decision-making, and view any attached documents or links. Frost & Sullivan appreciates how the NWA KnowledgeBase nicely addresses manufacturers' demand for accessible knowledge. Manufacturers and their operators benefit from the analytics-based knowledge and actions others have taken in the past (whether in their plant or elsewhere).

The NWA KnowledgeBase ensures accountability, supporting audit trail requirements for regulated industries (e.g., pharma) and tracks progress as engineers and operators access the database for status updates. For example, operators can inform the team that they have taken care of an issue so that when the engineers return to work the next day, they are aware of a problem - but know that it has been acknowledged. The engineers can view everything that took place the previous night using the event profile in the NWA KnowledgeBase reporting module. With an event profile, users can choose the part of the organization they want to search within, the date range they wish to review, and access well-summarized information at the top about all events that match the date and search criteria.

NWA KnowledgeBase also ensures that the same problems do not have to be solved repeatedly. To this end, a good practice that NWA enables is that it allows users to document their findings and provide relevant information to streamline problem-solving and ensure that similar future issues can be prevented or resolved quickly. Future users can see what was tried and did not work and benefit from the operational knowledge previously gained in other shifts or facilities. While operators can search and seek help, they can also link SharePoint sites, websites, or anything they might find, or think is valuable to their future team members when faced with a similar issue.

Frost & Sullivan commends NWA for accelerating time to problem discovery and issue resolution and making institutional knowledge available across an entire enterprise for efficient problem-solving. Its NWA Analytics Knowledge Suite particularly addresses manufacturers' top human capital challenges by preventing the loss of institutional and manufacturing analytics-based knowledge, reducing skills gaps, and improving new hires' time to productivity. With real-time analytics and an immediately accessible knowledge database, manufacturers can seamlessly pass on stored knowledge and best practices to new employees. Speed, accuracy, and consistency in process-related decision-making can save manufacturers time and money to perform better. Frost & Sullivan analysts agree that the advantages of NWA Analytics Knowledge Suite are far-reaching and long-lasting, providing NWA and its customers with a competitive edge.

Other competing analytics solutions only identify potential process issues. The NWA Analytics Knowledge Suite goes beyond generating initial signals to enable manufacturers to capture and retain the analytics-based knowledge of any process issue resolution and share that institutional knowledge across the

enterprise for operational excellence. Frost & Sullivan applauds NWA for redefining the future of manufacturing knowledge, solving the industry's top human capital challenges, delivering operational excellence, and accelerating digital transformation by capitalizing on institutional knowledge.

Customer Acquisition, Growth Potential, and Human Capital

NWA has more than 3,000 active customers across chemicals, food, oil and gas, packaging, life sciences, materials, and pharmaceutical industries in more than 100 countries. Unlike competing analytics approaches, the flexible, easy-to-use, and highly scalable NWA Analytics Knowledge Suite can be applied

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horizontally across an organization's operations, from inbound raw materials to outbound finished goods and all processes in between them. Its leading customers include Dow Chemical Company, ExxonMobil, USDA, AstraZeneca, and Saint-Gobain. Dow has deployed NWA solutions at more than 300 plants.

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For instance, manufacturing analytics is an integral part of Industry 4.0, and NWA Focus EMI, the foundational Industry 4.0 analytics platform, can help today's leading manufacturing enterprises deliver on the promise of Industry 4.0 solutions. The complete NWA Analytics Knowledge Suite optimizes institutional knowledge to enable manufacturers to strengthen and expedite digital transformation. NWA's partnership with Sartorius Data Analytics is expected to expand digital transformation programs within the manufacturing industry.

One of the primary factors contributing to NWA's success and development of the NWA Analytics Knowledge Suite is the company's highly efficient resource pool. The NWA team comprises highly qualified manufacturing, technology, and marketing and software development experts. The company also nurtures a work culture that promotes technology innovation so that it can continuously bring new and innovative manufacturing analytics solutions to the market.

Conclusion

Manufacturers need advanced analytics solutions to achieve operational excellence, prevent institutional knowledge losses, bridge employee skill gaps, and accelerate new hires' time to productivity. NWA successfully addresses these needs with its NWA Analytics Knowledge Suite, enabling manufacturers to identify process signals, codify institutional knowledge, and amplify process knowledge across the enterprise for quick and decisive actions. All knowledge related to process issue resolution is captured and made available across the board.

NWA's highly scalable analytics foundation and suite components such as NWA Focus EMI, NWA Quality Analyst, and NWA KnowledgeBase drive customers' digital transformation and Industry 4.0 programs. The NWA Analytics Knowledge Suite not only addresses human capital challenges, but also accelerates time to problem discovery and issue resolution. New employees can immediately access existing process knowledge and best practices to streamline problem-solving. Frost & Sullivan lauds NWA for consistently delivering innovative analytics solutions that address significant challenges of the manufacturing industry and fast-track manufacturers' digital transformation and Industry 4.0 journey.

With its strong overall performance, NWA earns Frost & Sullivan's 2022 North American Technology Innovation Leadership Award in the manufacturing analytics space for Industry 4.0 and digital transformation market.

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

