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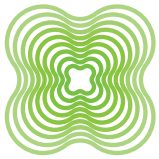


zyfra

2018 European AI-based Machine Data Monitoring Solution for Process Industries Entrepreneurial Company of the Year Award

2018
BEST PRACTICES
AWARDS

Contents

Background and Company Performance

Industry Challenges

The Industrial Internet of Things (IIoT) is emerging as one of the most appropriate technology platforms for data monitoring and analytics across process industries. It both bridges the gap between assets with digital content and enables efficient asset management. Though process industries were one of the first to take advantage of IIoT technology, several challenges to large-scale adoption remain. Nevertheless, across Europe data monitoring and analytics have climbed to the top of the corporate agenda. These technology-assisted activities have the potential to transform the way many enterprises do business by delivering predictive analytics that lead to performance improvements. However, a large percentage of organizations remain unsure about how to proceed and if they are prepared for large-scale infrastructure changes. This hesitancy is especially prevalent among process industries because they are asset-intensive. Meanwhile, the companies that have already implemented data monitoring and analytics have yet to fully exploit the technologies' full potential.

There are several entities involved in the process industries value chain, most importantly the OEMs (i.e., manufacturers of the assets, which could be a pump, turbine, reciprocating compressor, and so on), the data monitoring software providers, and the plant operators or end users. Organizations are able to justify investments in data monitoring and analytics when they own a large fleet of products or assets that produce high volumes of data. Airline companies and train companies, for example, are able to easily justify investment in data monitoring and analytics, yet in the industrial world, especially process industries, this is a challenge. In response, an emerging business model for data monitoring and analytics vendors is to charge by the hour per machine rather than as a one-time transactional revenue model. This new model ensures recurring business.

The goal of smart factories of the future is to unify the IIoT platforms to collaborate multiple hardware and software systems and eliminate defect rates. While hesitancy remains on the part of process industries to embrace the value proposition of analytics, vendors of data monitoring and analytics solutions are equally hesitant due to not fully understanding the software services business model. Services have not been particularly attractive in a business sense and are typically an add-on to a product sale. However, the impact of this challenge is expected to decline over the next five years as companies increase their investments into data monitoring and analytics solutions and understand more about the software-as-a-service (SaaS) subscription model. In this evolving landscape, vendors able to offer a solution that effectively records the data and uses advanced machine learning technology to analyze the real-time performance of industrial assets, predict failures, improve asset lifespan, reduce maintenance costs, and increase production output will find themselves best positioned to stay competitive in the dynamic European market.

Entrepreneurial Innovation and Customer Impact

In 2017, ZYFRA, a company specializing in IIoT and artificial intelligence (AI), established its headquarters in Helsinki, Finland to serve customers across the European Union. The company's product portfolio includes:

- Real-time machine data collection (MDC) solution to monitor machines and personal
- IIoT platform
- Predictive analytics
- Digital advisers

Market Gap

The operational efficiency of equipment is a complex indicator of an enterprise's overall production efficiency. With a firm understanding that industries will increasingly demand assistance in optimizing their operations, ZYFRA designed MDCplus, an automated information system for objective monitoring of production equipment and personnel. The MDCplus comprises base units and additional units. The user has access to two main parts in the monitoring system, the server side and the client side. The server side is a directory of all the machines in a production area that are connected. The uniqueness here is that the machines can be connected either in direct connection protocol or in a combined connection protocol. By using combined connection, signal can be collected from automatic equipment both over the network and by using the hardware connection of a dedicated device. The client-side user will have access to the enterprise unit scheme, which visualizes the production area or the entire facility, including the machines and state of equipment in operation, as well as the operator performing a specific process operation. The differentiating factor is that all information is presented in real-time and the client-side user can trace the operation history in the system for a chosen period of operating time.

In contrast to ZYFRA's top competitor's solution, which only shows superficial data such as vibration and temperature, ZYFRA's MDCplus offers an additional section that lists measurable parameters, such as spindle rotation rate, for a specific work shift time frame. This section allows information to be displayed about any measurable parameter, for example, feed force, over any period of time. In this way, customers gain access to critical and measurable parameters that not only enable them to fill the data gaps but also enable ZYFRA to gain a unique position in the industry.

Competitive Differentiation

Today, customers are on the lookout for data science solutions suitable for specific IIoT application needs instead of universal data science solutions. Typically, most data scientists

do not possess industry-specific knowledge, which leads them to design and build universal solutions that fail to revolutionize the customer experience. On the contrary, ZYFRA is supported by a team of highly proficient industrial AI experts with in-depth knowledge in applied mathematics, science-related subjects, and AI. This gives the company the competitive edge to design application-specific modules that suit individual customer requirements. Thus, in contrast to its competitors, ZYFRA has been able to revolutionize the customer experience in terms of customizability of modules. In fact, the company has fostered a culture of research and innovation in collaboration with top research and development (R&D) AI teams in SkolTech and MIPT, as well as in Russia's largest data science community, among others.

As enterprises look to harness the power of Big Data to achieve their IIoT transformation goals in line with the trend of digitization, ZYFRA has made its flagship product, MDCplus, available with various modules for catering to a broad set of diverse personalized customer requirements. They include vibration monitoring and diagnostics, production monitoring, downtime management (CMMS), CNC program management, and API connection for external ERP, CAD/CAM/PDM, MES, and BI systems.

From the customer perspective, this unique modular approach enables them to opt for the right module that suits their respective process monitoring and management needs. These needs range from tracking assets and monitoring and managing production processes to inventory management, optimization of technology processes, personnel performance and operational efficiency management, and cost management, among other variables. For instance, MDCplus' real-time events monitoring feature allows users to configure notification parameters as necessary. Notifications about the designated events are sent directly either as short message service (SMS) or web notification to the employee in charge. This gives ample time for the employee to take action and prevent downtime. Frost & Sullivan is particularly impressed that MDCplus is the only solution in the market that offers a video monitoring section where the machine can be monitored in real time. Also, the user can view machine operation history to find out the causes of abnormal operations, if necessary.

Combining its machine data collection system with its cutting-edge AI-enabled Digital Advisor has strengthened ZYFRA's positioning at the forefront of competition. The company's Digital Advisor intelligently converts the huge sets of complex data into meaningful insights and prescribes solutions that not only optimize customers' manufacturing efficiency but also enhance production quality and lower the total cost of ownership (TCO) they incur. Leveraging deep machine learning algorithms and numeric-based optimization techniques, the AI Digital Advisor accurately identifies hidden patterns in the sourced data. It can also compare current results with historical records, predict manufacturing quality defects in the early product development phase, optimize the use of raw materials and power consumption, and dynamically control key manufacturing performance parameters through real-time modifications in manufacturing variables. Thus, by leveraging these modules, along with the powerful AI tool, customers are able to gain in-depth insights into their respective application performance, all of which leads to optimized data-driven decision-making.

With customization fast gaining traction as a key enabler of positive customer experience, one of the differentiating aspects of MDCplus is the presentation of analytical information as tables, graphs, or report summaries available in over 100 templates. What enhances the standard of customer experience is that ZYFRA allows customers to view the tailored reports on not only the monitors on the smart factory floor but also from their smartphones and tablets. This mobile flexibility allows customers to access data-driven reports from anywhere and at any time, thereby keeping them connected to their process plants. They are, thus, able to instantly implement corrective measures to fix predicted issues without delay that otherwise would cause heavy financial damage and translate into lost profits.

Performance Value

The powerful combination of ZYFRA's MDCplus and AI-based Digital Advisor has been enabling customers from a wide scope of industries to extract unmatched value out of the huge sets of data captured from different sources and helping them move closer to their IIoT transformation goals. These industries range from metallurgy, oil and gas (O&G), machinery, mining, and chemicals and petrochemicals to healthcare, energy, and retail. ZYFRA's Big Data and AI-driven offerings enable customers to not only monitor industrial assets in real time, but also predict and optimize maintenance, and prevent costly unplanned outages. Customers witness faster installation time, reduced scrap, minimized downtime, and improved energy efficiency, all of which positively impact their TCO. While ZYFRA's petrochemical customers have recorded sudden downtime reduction by 40%, customers from the oil refinery sector have witnessed demand prediction accuracy by 92% in addition to reduction in plan error against fact error to <5%.

For example, a certain customer from the petrochemical industry adopted ZYFRA's Digital Advisor for optimizing production for a propane dehydration unit to be able to earn more profits with reduced investments. Statistical mathematical modelling and real-time recommendations on optimal process settings, coupled with visualization of online forecasts presented on a dashboard and decision-making assistance from process engineers, enabled it to record 0.4% increase in productivity. In another instance, a digital twin of the benzene production process leveraging AI algorithms enabled a customer to gain visibility into the operational performance across the benzene production facility. The prescriptive solutions on optimizing the entire plant margin while also considering raw material composition and environmental conditions allowed the customer to witness a 1.5% boost in benzene production while also recording fuel gas reduction by 3%. Ultimately, this sort of boost in operational excellence brings down customers' operational expenses and hence their TCO.

Passionate Persistence

Founded in 2017 and led by the reputed Finnish entrepreneur Pekka Viljakainen, ZYFRA has demonstrated passionate persistence in its efforts to enable customers in Europe to achieve their IIoT transformation goals in Industry 4.0 environments through its launch of cutting-edge IoT and IIoT solutions, such as MDCplus and AI-enabled Digital Advisor. In November 2017, the company forged a partnership with Cron-Tek Oy, a Finland-based provider of

industrial instruments and software tools along with CNC machines and parts, at Europe's IT Slush event. This partnership is considered strategic in that it opened the channel for ZYFRA to introduce its MDCplus system to the European market. Currently, ZYFRA is looking to invest nearly RUB6 billion in building industrial digitalization technologies. Aligned to its international expansion plans, the company is also planning to forge a minimum of 10 strategic partnerships in the Indian market over the next two years in a move to firmly penetrate the machine tool industry.

Brand Equity

With an installed base of 7000 connected machines and 25 Digital Advisors, ZYFRA already enjoys strong brand name recognition in the European market despite being a new industry player. ZYFRA's wide network of resellers has established its solid presence across not only Europe but also Asia within a short time span. While Rapid Progress Ltd. covers Bulgaria, Cron-Tek Oy represents ZYFRA all across Finland, and Logicad covers Romania. ABCON Group, PARIVARTAN|AUTOMATION, and Spudweb have strengthened ZYFRA's local presence in India. In China, ZYFRA reaches out to customers with its offerings through its reseller Evget. The fact that brands, such as Gazprom Neft that is one of the world's top 20 O&G companies and ranks among top three companies in terms of production and refining volumes in Russia, have associated themselves with ZYFRA has strengthened its brand positioning and credibility. Both companies signed a cooperation deal in May 2018 to deploy a new "Digital Plant" that is slated to be Russia's first digital platform initiative for the efficient handling of manufacturing, sales, and logistics operations for oil products.

Conclusion

Led by the renowned Finnish entrepreneur Pekka Viljakainen, Helsinki-headquartered ZYFRA has demonstrated passionate persistence in its efforts to accelerate process industry customers' journey towards digitalization in just one year since its foundation. Its flagship machine data collection system MDCplus enables customers hailing from diverse industry verticals to remotely track operational performance of assets and processes in Industry 4.0 environments. In contrast to its top competitor's solution, which only shows superficial data such as vibration and temperature, ZYFRA's MDCplus offers an additional section that lists measurable parameters, such as spindle rotation rate, for a specific work shift time frame. Furthermore, ZYFRA has been able to revolutionize the customer experience in terms of customizability of modules, a feature its competitors lack in their products. Driven by its indomitable entrepreneurial spirit and backed by an AI team with application-specific R&D expertise, ZYFRA is looking to expand internationally through strategic partnerships, such as that of Cron-Tek Oy.

For its strong overall performance, ZYFRA has earned Frost & Sullivan's 2018 Entrepreneurial Company of the Year Award.

Significance of Entrepreneurial Leadership

Ultimately, growth in any organization depends upon customers purchasing from a company and then making the decision to return time and again. In a sense, then, everything is truly about the customer—and making those customers happy is the cornerstone of any long-term successful innovation or growth strategy. To achieve these dual goals (customer engagement and growth), an organization must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Entrepreneurial Leadership

Demand forecasting, branding, and differentiation underpin an entrepreneurial company's journey toward forming deep relationships with customers and permanently altering the market with their actions. These two concepts—Entrepreneurial Innovation and Customer Impact—are the cornerstones of this Award, as discussed further in the next section.

Key Benchmarking Criteria

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated two key factors—Entrepreneurial Innovation and Customer Impact—according to the criteria identified below.

Entrepreneurial Innovation

Criterion 1: Market Disruption
Criterion 2: Competitive Differentiation
Criterion 3: Market Gaps
Criterion 4: Blue Ocean Strategy
Criterion 5: Passionate Persistence

Customer Impact

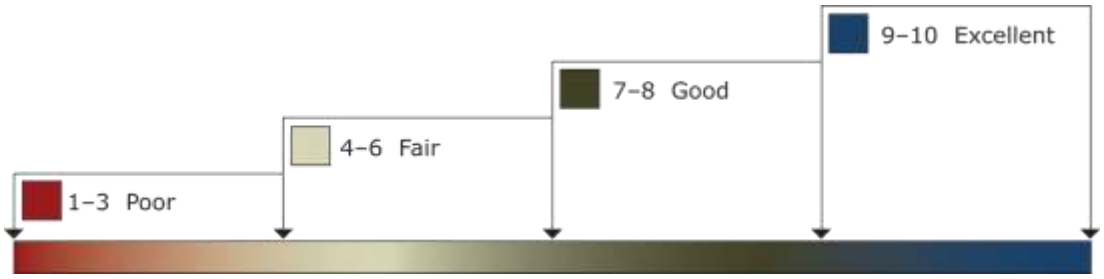
Criterion 1: Price/Performance Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practices Award Analysis for ZYFRA

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by Entrepreneurial Innovation and Customer Impact (i.e., These are the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard.). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key participants as Competitor 2 and Competitor 3.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Entrepreneurial Company of the Year	Entrepreneurial Innovation	Customer Impact	**Average Rating**
ZYFRA	**9**	**9.5**	**9.25**
Competitor 2	8	8	8
Competitor 3	7	7.5	7.25

Entrepreneurial Innovation

Criterion 1: Market Disruption

Requirement: Innovative solutions that have genuine potential to disrupt the market, obsoleting current solutions and shaking up competition

Criterion 2: Competitive Differentiation

Requirement: Deep understanding of both current and emerging competition to create and communicate strong competitive differentiators in the market

Criterion 3: Market Gaps

Requirement: A clear understanding of customers' desired outcomes, the products that currently help them achieve those outcomes, and where key gaps may exist

Criterion 4: Blue Ocean Strategy

Requirement: Strategic focus on creating a leadership position in a potentially "uncontested" market space, manifested by stiff barriers to entry for competitors

Criterion 5: Passionate Persistence

Requirement: A deep belief in the "rightness" of an idea and a commitment to pursuing it despite seemingly insurmountable obstacles

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience

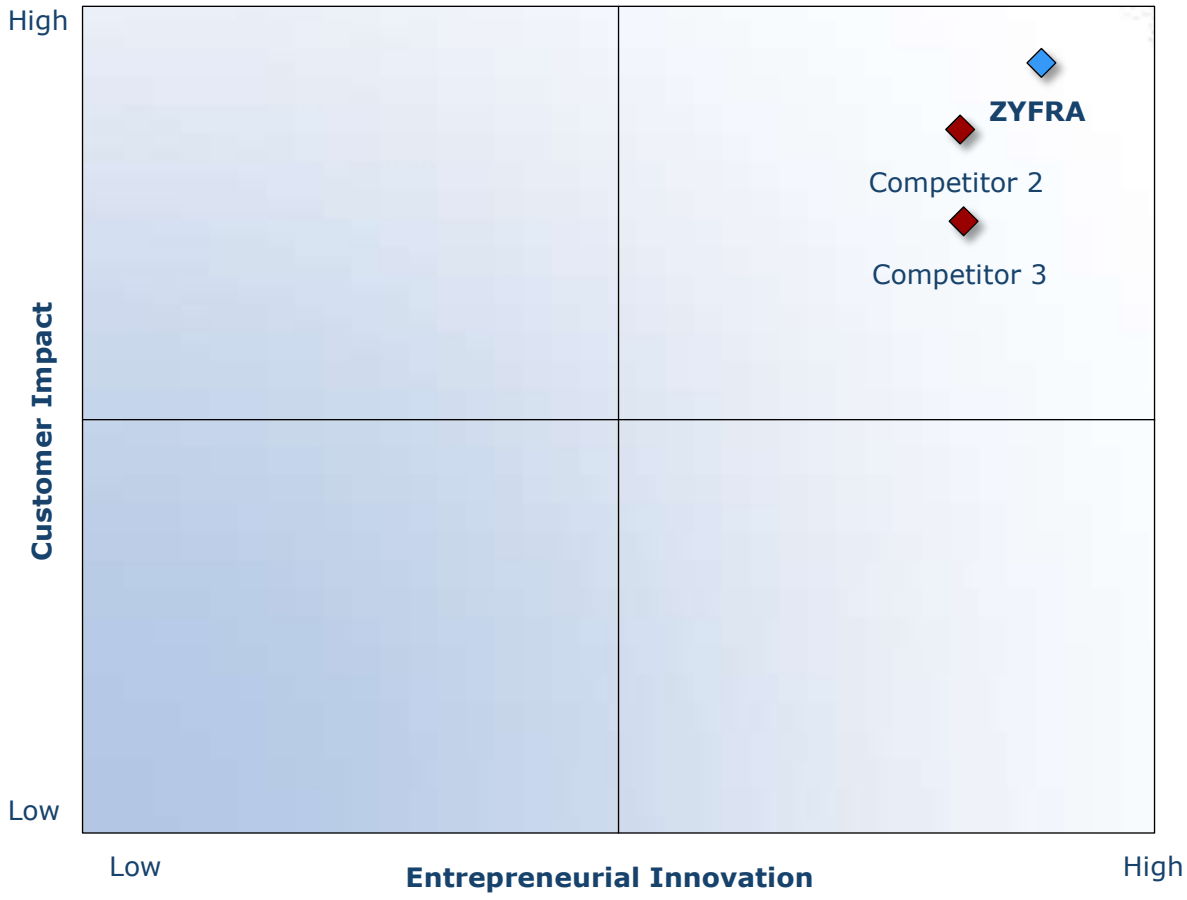
Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.



Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP		OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	**Monitor, target, and screen**	Identify Award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2	**Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4	**Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized Award candidates
6	**Conduct global industry review**	Build consensus on Award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7	**Perform quality check**	Develop official Award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8	**Reconnect with panel of industry experts**	Finalize the selection of the best-practice Award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best-practice criteria
9	**Communicate recognition**	Inform Award recipient of Award recognition	• Present Award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10	**Take strategic action**	Upon licensing, company is able to share Award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.