

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

BEST PRACTICES

AWARDS

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

2020 BEST
PRACTICES
AWARD

KATHREIN

2020 EUROPEAN RFID
READERS IN MANUFACTURING AND LOGISTICS
NEW PRODUCT INNOVATION AWARD

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Background and Company Performance

Industry Challenges

As the Internet of Things (IoT) adoption gradually increases across industries such as retail, manufacturing, and healthcare, organizations are embracing emerging technologies to track assets on-premises. Depending on the use case, hardware such as passive Radio-Frequency Identification (RFID) tags, active RFID tags, and Real-Time Location System (RTLS) solutions are utilized.

According to Frost & Sullivan, while ultra-wideband radio-based RTLS technology is designed based on specific principles and efficiencies, such techniques are quite costly. Moreover, the tags embedded within the technologies generally consume high amounts of energy, accelerating battery depletion and requiring recurrent capital investments from customers. This hinders accurate real-time location positioning of assets and people.

Given the importance of RFID in the IoT architecture, Frost & Sullivan analysts conclude that vendors offering a comprehensive range of cost-efficient identification technologies that integrate with existing infrastructure will enjoy a competitive advantage in the market.

New Product Attributes and Customer Impact

Broad RFID Portfolio Delivering High Performance at Optimum Pricing

Founded in 1983, Kathrein Solutions GmbH (Kathrein) is headquartered in Stephanskirchen, Germany, and provides a end to end solution for track and trace applications incorporating identification technologies such as RAIN RFID systems, and UWB based wide area network technologies (RTLS). Kathrein's IoT portfolio offers a wide range of RFID readers, RTLS solutions, and CrossTalk software.

In 2020, Kathrein sold its Mobile Communication business to Ericsson to focus on RFID solutions. Frost & Sullivan analysts monitored how the company's growth as a major player in the RFID antenna and reader market has strengthened over the years through strategic acquisitions, product innovations, and business best practices. Backed by its powerful antenna technology and strategy focused on growing and emerging technology markets, Kathrein is now a formidable provider of IoT solutions to applications across industrial, vehicle identification, logistics, and Healthcare Logistics.

Frost & Sullivan projects the Industrial Internet of Things (IIoT) business to surpass \$520 million by the end of 2020, exceeding 20% Compound Annual Growth Rate (CAGR). The automotive industry is expected to be one of the major revenue contributors to the IIoT market, with increasing investments in connected and autonomous cars. The current COVID-19 pandemic is also accelerating digital transformation in process and manufacturing industries, as more Machine-to-Machine (M2M) communication and remote monitoring technologies are adopted.

IoT scenarios in industries include applications such as inventory management, track and trace, material handling, device management, and supply chain management. RFID/RTLS is expected to be the backbone of this transformation. For example, up to 65% of goods

and services in the automotive industry are through external suppliers. As such, gaining supply chain visibility offers immense value for automotive companies. Traditionally, automotive companies have used barcodes, which are time-consuming and labor-intensive. Frost & Sullivan recognizes how Kathrein's RFID hardware and RTLS solution (K-RTLS) properly address these challenges.

RFID technology continues to gain prominence across multiple industries, with several deployments reported across the United States, Europe, and Asia-Pacific. However, initial costs associated with RFID implementation, in particular, the Ultra-Wide Band (UWB) RTLS, have served as a major roadblock to adoption.

In 2019, Kathrein introduced the all new ARU 8500, an RFID antenna reader targeted at logistics applications. The uniqueness of this product is in its integrated circular switch beam antenna, which enables the swiveling of the antenna beam to detect the direction of the asset movement. By introducing the antenna reader, Kathrein negates the need for sensors such as light barriers to detect movement direction. In 2019, Kathrein also introduced its K-RTLS solution based on the UWB technology, enabling accurate asset localization of approximately 30 cm. Through its K-RTLS solution, Kathrein has created a cost-effective, precise RTLS system, rolled out and in operating mode since 2019 in the main Plants of Audi Germany.

The K-RTLS solution comprises 3 components viz. RTLS transponders, nodes, and CrossTalk software. Unlike other competitors, Kathrein's RTLS transponder has an integrated NFC and UHF tag, which provides the necessary flexibility of long-range and near field identification. This unique combination of UWB-NFC-UHF technologies enables seamless integration with existing RFID infrastructure. Also, in switching to the UHF mode, the transponder can be put to sleep when not in use, resulting in enhanced battery life.

Since the UWB RTLS is used in applications requiring coverage over a large area, nodes are installed at various points to form a network that transmits data. To reduce the costs associated with installation and cabling, the K-RTLS nodes are connected using Power over Ethernet (PoE), with each node having its own 2.4GHz radio network for data transfer. As applications within the industrial environment have varied transponder mounting requirements, Kathrein offers an innovative mounting adapter with transponders enabling customers to dynamically change between fixed and temporary mounting depending on the application.

CrossTalk IoT suite, the final component of the K-RTLS solution, is an advanced software enabling AutoID and IoT device management and track and trace visualization. Unlike most other competitors, Frost & Sullivan points out that the CrossTalk solution offers a unique combination of AutoID Middleware, Device Management, and Edgeware in one solution. The software enables data processing and analysis from technologies such as GPS, barcodes, RTLS, and RFID and supports more than 250 hardware devices from various brands. Frost & Sullivan believes that the delivery of a one-stop-shop track and trace solutions portfolio targeting growing IoT applications from a single vendor positions Kathrein to offer customers a competitive advantage in embracing digitalization.

Providing Unmatched Customer Value to Spur Market Adoption

Kathrein has a strong brand image in Germany, which is evident from its impressive list of customers, including Bosch Siemens AG, Audi AG, Volkswagen, Porsche, and BMW. Through these customers, Kathrein is expanding its customer base via integration partners to other parts of Europe and globally, which is key to its customer acquisition strategy. Kathrein has always been focused on enhancing the value offered to its customers through new product introductions. One such example is the ARU2400 eKanBan Reader introduced in 2020 with FAKRA connectors. These connectors are very cost effective, resistant to vibration and can be installed easily, thus reducing the cost of installation. The cascading feature of SmartShelf Antennas (SMSh), enabling the possibility to connect up to 32 antennas and managing them centrally using one reader, provides additional value. For example, a Stuttgart-based premium automotive Manufacturer chose Kathrein Solutions to introduce RFID into their new leand Factory 56 Plant in their bid to be an early adopter of digitization. All processes along the supply chain were equipped with relevant RFID hardware and enabled a completely digital supply chain providing end-to-end visibility.

Kathrein prioritizes highly interactive customer relationships, enabling the company to enhance its portfolio continuously. The company employs a strong customer feedback mechanism through meetings with customers and its partner ecosystem to understand customer pain points. Kathrein recently upgraded its Customer Relationship Management (CRM) system, integrating high-value customers into the new CRM system to establish a consistent feedback mechanism translating into customer-centric product development.

An example of the impact of customer feedback on product development at Kathrein involves the release of the new version of the CrossTalk software. The new version will have a new User Interface (UI), easy license management, and Android support. As industrial mobile devices with Android Operating System (OS) support RFID and barcode scanning, CrossTalk has enabled its Mobile Application Framework (MAF) to support Android OS devices. In 2019, Kathrein set up a measuring chamber, allowing the possibility of testing, simulating, and optimizing antenna and RFID/RTLS transponders, and providing bespoke customer analysis. By performing professional testing services on behalf of the customer, Kathrein gains insights on customer requirements and pain points, which it then uses in its product development process.

Conclusion

As industries embrace IoT technologies, tracking and tracing assets, tools, and personnel are increasingly important. Driven by the need to reduce complexities for customers, the Kathrein RFID solutions portfolio boasts a wide breadth of RFID hardware and IoT software suite offering powerful capabilities and value-added benefits, successfully attracting top-notch brands across multiple verticals. Kathrein leverages its elite customers to spur further market adoption and enhance its partner ecosystem, reinforcing its value proposition to capture new market opportunities.

With its strong overall performance, Kathrein Solutions has earned the 2020 Frost & Sullivan New Product Innovation Award.

Significance of New Product Innovation

Ultimately, growth in any organization depends on continually introducing new products to the market and successfully commercializing those products. For these dual goals to occur, a company must be best in class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for consistently translating ideas into high-quality products that have a profound impact on the customer.

Key Benchmarking Criteria

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated 2 key factors, New Product Attributes and Customer Impact, according to the criteria identified below.

New Product Attributes

Criterion 1: Match to Needs

Requirement: Customer needs directly influence and inspire the product's design and positioning.

Criterion 2: Reliability

Requirement: The product consistently meets or exceeds customer expectations for consistent performance during its entire life cycle.

Criterion 3: Quality

Requirement: Product offers best-in-class quality, with a full complement of features and functionalities.

Criterion 4: Positioning

Requirement: The product serves a unique, unmet need that competitors cannot easily replicate.

Criterion 5: Design

Requirement: The product features an innovative design, enhancing both visual appeal and ease of use.

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 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.

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 practices 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 world	<ul style="list-style-type: none"> Conduct in-depth industry research Identify emerging industries Scan multiple regions 	Pipeline of candidates that potentially meet all best practices criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> Interview thought leaders and industry practitioners Assess candidates' fit with best practices 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	<ul style="list-style-type: none"> Confirm best practices 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	<ul style="list-style-type: none"> Brainstorm ranking options Invite multiple perspectives on candidates' performance Update candidate profiles 	Final prioritization of all eligible candidates and companion best practices positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 practices Award recipient	<ul style="list-style-type: none"> Review analysis with panel Build consensus Select recipient 	Decision on which company performs best against all best practices criteria
9 Communicate recognition	Inform Award recipient of recognition	<ul style="list-style-type: none"> Announce 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	<ul style="list-style-type: none"> Coordinate media outreach Design a marketing plan Assess Award's role in 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 the 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, resulting in 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, helps clients 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 practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit <http://www.frost.com>.