2017 North American Industrial Robotics Software for Discrete Industries
Entrepreneurial Company of the Year Award
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Background and Company Performance

Industry Challenges

The manufacturing world has witnessed many disruptive innovations over the last ten years, and the Industrial Internet of Things (IIoT) contributes largely to the latest phase of this evolving landscape. With industrial robots penetrating factories faster than ever and promising ubiquitous connectivity and real-time control, traditional manufacturing concepts will undergo an overhaul in the near future. But industrial customers are often skeptical and hesitant about advanced technological implementation, mainly owing to the lack of a definitive solution provider capable of handling disparate communication protocols. In addition, the long period of deployment and the uncertainty over return on investment are further stretching the practical realization of IIoT.

These deterrents call for innovative industrial solutions that are fast and easy to deploy with an acceptable pricing model capable of showing incremental long-term growth to the buyer.

Tend (www.tend.ai) is a smart cloud robotics start-up, founded in the United States in 2016. By conjoining the latest technologies such as robotics, cloud computing, and artificial intelligence, Tend developed a cloud software platform that allows remote monitoring, analysis and control of industrial robots via smart handhelds such as mobiles and tablets. Tend aims to make robots and automation more flexible, intuitive, and affordable, beginning with the remote monitoring of machine-tending and similar applications.

Entrepreneurial Innovation and Customer Impact

Market Disruption

Tend’s smart cloud robotics solutions allow users to monitor and analyze shop floor robots from their mobile devices without installing any additional sensors. Most of the solutions in the market require installation of additional field sensors and protocol converters into the robots to enable cloud connectivity and analytics, but this is not required in Tend’s in.view™ (“intelligent view”) solution. By leveraging the robot’s native sensor capabilities and with added artificial intelligence algorithms, in.view is able to read and track critical robot and production data that is then relayed directly to users’ mobile devices via the cloud.

In place of extra sensors being installed on the shop floor machines, Tend uses an optional Web camera as a robot accessory to enable human-like capabilities such as reading screens, inspecting finished parts, and relaying machine-performance data accordingly. When pitted against current market offerings, Frost & Sullivan recognizes this innovative software platform as a one-of-a-kind turnkey solution in the industry, one that has significant potential to obsolete current solutions and disrupt the competitive landscape.
Competitive Differentiation

Tend’s deep understanding of both current and emerging competition from major industrial robotics players has led to the development of strong product differentiators. The most prominent differentiator is that Tend does not require any sensor to be mounted on the robot or the machine to be tended. This reduces the time to integrate the system and lowers project deployment time to minutes. The cloud-based program is preconfigured according to the customer’s robot type, and is suitable for use with the leading industrial and collaborative robots.

Tend in.view also facilitates the monitoring of multiple robots through a single mobile app, giving users the flexibility and power to remotely monitor key production performance metrics on their smart devices. Using a simple interface, users can automatically receive a wide range of alerts and notifications from their robots remotely, while proactively accessing key data such as robot logs and job status updates. With such unique differentiators, Tend positions itself as a strong market competitor.

Market Gaps

Tend was founded as a solution to remotely tend to 3D printers using smart devices, but it was quick to recognize the widespread industry problem manufacturers faced to monitor their collaborative and industrial robots on the shop floor. This clear understanding and efficient product development focused on user interface, scalability, and ease of use led to the in.view solution, which simulates human interaction with production machines and allows the robots to share information with other shop floor robots as well as remote staff members in charge of keeping that production running efficiently. Tend has perfectly positioned in.view to allow end users, system integrators, and robot service technicians to access real time job stats, download robot logs, analyze error codes, and remotely troubleshoot problems or schedule on-site maintenance in case of emergency.

Blue Ocean Strategy

Tend exerts diligent effort on educating existing and potential customers about its innovative solution by active participation in trade shows, webinars, white papers and other customer-engagement programs as a part of its marketing strategy. On the product development side, Tend believes it is necessary for its solution to be robot-agnostic and not remain confined to collaborative robots. As of now, in.view is compatible with Universal Robots, Rethink robots, and FANUC robots, which Tend plans on extending to include other industrial and collaborative robot brands. As traditional industrial robots are not human-friendly when compared to collaborative robots, Tend estimates the demand for remotely interfacing with these robots will be higher, which will allow Tend to create a stiff barrier entry for its competitors. On the supply chain front, an increase in interest from system integrators and distributors is occurring, which Tend is hoping to capitalize in the future by creating a partnership network. With strong focus on product, customer, and competition, Tend is solidifying a leadership position in an uncontested market space and
building stiff entry barriers.

**Price/Performance Value**

Tend offers in.view as software-as-a-service on a subscription-based model. With customer success in mind, in.view software is priced at 250 USD per month of usage for a single robot, with an unlimited number of user access points. With no hardware to buy or installation charges needed, Tend’s subscription model allows the customer to pay for the service as a monthly operating expense, rather than a more costly and strictly authorized capital expense. With a no contract and no obligation model, as well as the ability for companies to utilize existing machines, robots and staff, the company has succeeded in creating a customer-centric atmosphere conducive to the future adoption of IIoT technologies. By providing technology to extract the maximum performance out of machines, monitor and troubleshoot production remotely, scale-up robot performance quickly, and leverage the potential of IoT techniques, Tend offers the best value for the price when compared to similar offerings in the market, exceeding customer expectations.

**Customer Ownership Experience**

Tend has been amassing the interest of customers in various discrete manufacturing setups, such as electronics, consumer goods and pharmaceuticals. Owing to its innovative solution for robotic machine tending, Tend has also been successfully deployed in Spain, Mexico and Japan, apart from its major customer base in the United States. As the in.view software is intuitive and user friendly, Tend allows self-setup for customers based on instruction manuals while standing by for any remote support that may be required. Using the website login portal, Tend is able to continuously monitor the usage rate and pattern of every customer and deliver customized experiences to each of them.

**Conclusion**

Tend addresses a complex challenge faced by industrial manufactures in monitoring and communicating with their shop floor robots: The first-of-its-kind in.view smart cloud robotics solution transcends protocol barriers and gives customers a head start on their journey towards IIoT. By bringing together the latest technologies such as robotics, cloud computing, and artificial intelligence, Tend developed a cloud software platform that allows remote monitoring, analysis and control of industrial robots via smart handelds such as mobiles and tablets. By placing a premium on ensuring simplicity in its interactions with customers, prospects, and partners, Tend is strongly poised for sustainable growth across a host of manufacturing sectors. With its strong overall performance, Tend has earned Frost & Sullivan’s 2017 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.

Best Practices Award Analysis for Tend

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.

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

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.