



2014 Global Plant Data Management and Quality Optimization Solutions for Discrete Industries New Product Innovation Award



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



50 Years of Growth, Innovation & Leadership

## Contents

Background and Company Performance .....	3
<i>Industry Challenges</i> .....	3
<i>New Product Attributes and Customer Impact</i> .....	3
<i>Conclusion</i> .....	6
Significance of New Product Innovation.....	8
Understanding New Product Innovation.....	8
Key Benchmarking Criteria .....	9
Best Practice Award Analysis for ATS International .....	9
<i>Decision Support Scorecard</i> .....	9
<i>New Product Attributes</i> .....	10
<i>Customer Impact</i> .....	10
<i>Decision Support Matrix</i> .....	11
The Intersection between 360-Degree Research and Best Practices Awards.....	12
<i>Research Methodology</i> .....	12
About Frost & Sullivan .....	14

## Background and Company Performance

### *Industry Challenges*

The evolution of the Internet of things (IoT) is a huge facilitator of the convergence of operational technology (OT) with information technology (IT). This has driven the demand for manufacturing solution platforms that allow system integrators and software suppliers to integrate multiple solutions seamlessly. However, the transition phase in this scenario is likely to bring serious challenges in the manufacturing environment.

The implementation of IoT will result in the generation of large amounts of data across the manufacturing space. This will increase the need for state-of-the-art data collection, reporting, and analysis platforms underlying the development and optimization of production strategies. Furthermore, the platforms are required to successfully integrate cross-divisional applications, which would aid in standardizing process methodologies, thus increasing manufacturing performance and improving quality.

ATS International's proactive approach towards research and development has resulted in the development of a robust data collection, reporting, and analysis platform.

### *New Product Attributes and Customer Impact*

#### **Quality**

End users are looking for low price, high quality, and customized commodities in discrete industries. The creation of these products is achievable due to the continuous optimization of processes and production methodologies. High-quality data from multiple operations is required to develop strategies for continuously optimizing operations.

ATS International has been successful in developing its Attribute, Dimensional, Operational, and Shared (ADOS) suite, which is dedicated to effectively handling data from the manufacturing environment. The suite is capable of collecting, reporting, and analysing data from diverse operations and then transferring the processed information to the appropriate divisions. The unique proposition of this suite is that the collected data is analysed and mapped across the value chain to determine the best fit, so that the appropriate data is utilized by the right people to optimize production operations.

As an example of this ATS International has designed ATS Inspect, an attribute data collection solution that addresses data management challenges in high-volume and high-mix industries. The main differentiating factor with this solution is the Data Collect inspection functionality, which allows the data from visual inspections to be added to a database, thus ensuring that all information can be associated with the individual product and can be retrieved later for further analysis. Both visual and functional data entries are allowed in ATS Inspect. Furthermore, the screen layout and platform can be customized to match language, device or workstation needs.

Best Practices Example: The development of the ADOS suite has been matched to the enterprise topology so that data from visual inspection, option content check and dimensional validation on multiple products can be integrated in a quick and seamless manner to ensure customers receive perfect products.

## **Design**

The convergence of enterprise management systems is leading to real-time interaction between design data and production data. This brings in the idea of establishing continuous interactions between the data from product life management (PLM) and manufacturing executions systems (MES).

ATS International is well ahead of its competitors in developing ATS CM4D, a single automated solution through which parts manufactured by a supplier can be analysed with respect to drawings existing within in-house PLM systems. Unlike classic inspection data reporting systems that compare the actual parts with computer-aided drawings in an isolated fashion, ATS CM4D presents dimensional data from solid models for comparison with the data from the coordinate measuring machine, in real-time. This helps to validate the critical parts well before they are shipped from the suppliers, thus saving money and time.

Best Practices Example: ATS CM4D is widely accepted by end users, particularly in the automotive industry. Ten out of the top fifteen original equipment manufacturers (OEMs) in the automotive industry have adopted this solution, which uses OEM and supplier dimensional data to validate perfect assembly before shipping the parts, thus highlighting this solution's impact on quality.

## **Positioning**

In high-volume and high-mix industries such as food and beverage, real-time data management for individual products is necessary to ensure an optimized supply chain system. Additionally, it is essential to maintain specific information for each product in order to fully comply with changing regulations. It is critical to have robust data management solutions to overcome these challenges and produce quality products in a cost-effective fashion.

An example of this within ADOS is ATS SPC. This is a real-time statistical process control and precision measurement system for use in manufacturing. With a drag and drop visual configuration and a fully customizable screen, ATS SPC is simple to set up and operate to collect the key performance variables in process and discrete manufacturing.

Best Practices Example: The implementation of this solution in a large brewery has resulted in a 15% reduction in production line downtime, thus supporting increased product revenue.

## **Customer Ownership Experience**

Technology evolution in the industrial manufacturing arena has resulted in a number of software solutions to manage multiple operations along the value chain. The critical

challenge for data management systems is to provide consistent information across multiple interfaces, thus keeping all of an organization's employees on the same page.

Superior customer experience is achieved by ensuring that every single person in an organization has access to the same consistent data, in real-time. This enables decision making from a global perspective, rather than decisions that are disconnected and limited to individual divisions. This is achieved through ATS Intelligence which provides a systematic approach of collecting data from various departments through the OPC protocol, which is stored in SQL servers. Each data packet has a time stamp on it, thus creating a unique identity. This data is shared as processed information, such as key performance indicators (KPI) or overall equipment effectiveness (OEE), through a centralized server. The whole process ensures that the data is consistent across multiple interfaces.

Best Practices Example: The implementation of the ATS Inspect and ATS Intelligence modules in a leading automotive company has significantly supported its lean manufacturing methodologies by providing real-time KPI's such as quality, productivity and delivery to the self-directed teams, those who are directly engaged with the manufacturing process.

### **Price/Performance Value**

Globalization has driven the establishment of manufacturing plants across multiple locations in developing countries. This, in turn, has driven demand to create automation systems that can balance level loading across all plants. This is only feasible through effective data management and real-time data analytics.

A major advantage of the ADOS suite is its multi-site role capability. ATS International has been proactive in leveraging technologies from existing enterprise solution systems to develop data management platforms that can be implemented with ease across multiple locations. This capability means that ATS International can successfully help its customers maximize their production efficiencies by providing complete visibility of operational data from multiple plants. This holistic solution has been widely accepted by customers, since it ensures the complete standardization of data collection and analysis processes across different manufacturing plants.

Best Practices Example: The broad functionality of the ADOS suite is unique, as end users can access data without switching to different data management systems. A case example from the aerospace industry highlights the solution's ease-of-use, in which data from approximately 400,000 parts is collected and analysed across multiple vendors in the supply chain.

### **Match to Needs**

The future of manufacturing will witness the extensive utilization of data and analytics across the enterprise. In such scenarios, customers will want smart solutions that provide them with information that aids them in making strategic decisions.

ATS International's solutions transform vast amounts of data collected across the manufacturing process into information such as key performance indicators (KPIs), which

enable decision-guiding reports. ATS Intelligence’s product functionality is the backbone that enables the conversion of raw data into powerful analytical assets. Unlike most other solutions, ATS Intelligence is equipped to collect and process product, equipment, and process information on a single platform.

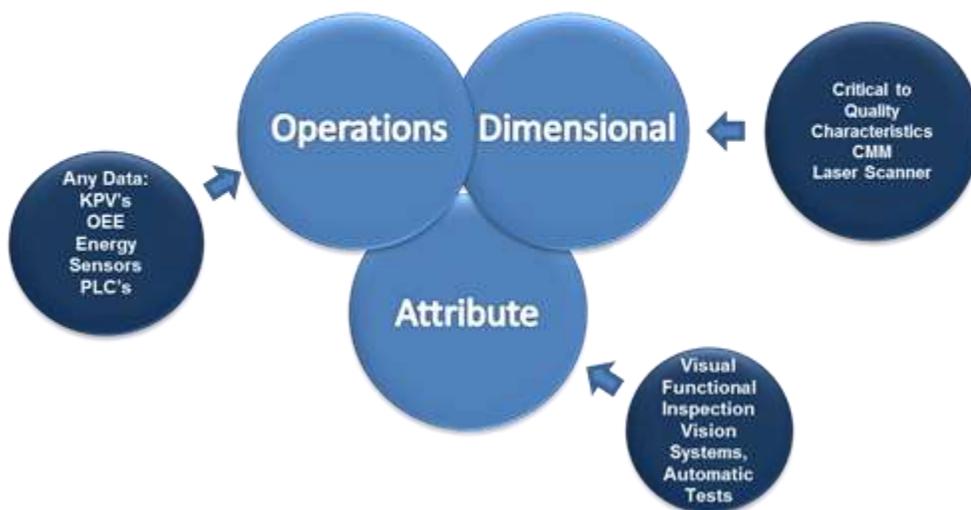
Best Practices Example: This innovative and integrated intelligence functionality has helped the company gain considerable appreciation from discrete industry end users. The implementation of ATS Intelligence’s functionality (part of the ADOS suite) at one of the world's largest electronics manufacturers has ensured considerable improvement in overall equipment effectiveness (OEE).

*Conclusion*

ATS International’s innovative ADOS suite, consisting of ATS Inspect, ATS Intelligence, ATS CM4D, ATS SPC and ATS Shared Services, has been instrumental in improving data quality in the manufacturing environment. The company’s solution has provided customers with reliable data management platforms to support enterprise management solutions. Furthermore, its proactive approach in integrating PLM with production operations in real-time to ensure cost-effective quality inspection is highly commendable. Based on the findings of Frost & Sullivan's detailed and independent analysis of existing data management and quality optimization solutions for discrete industries, ATS International is recognized with the 2014 Global New Product Innovation Leadership Award in Data Management and Quality Optimization Solutions for Discrete Industries.

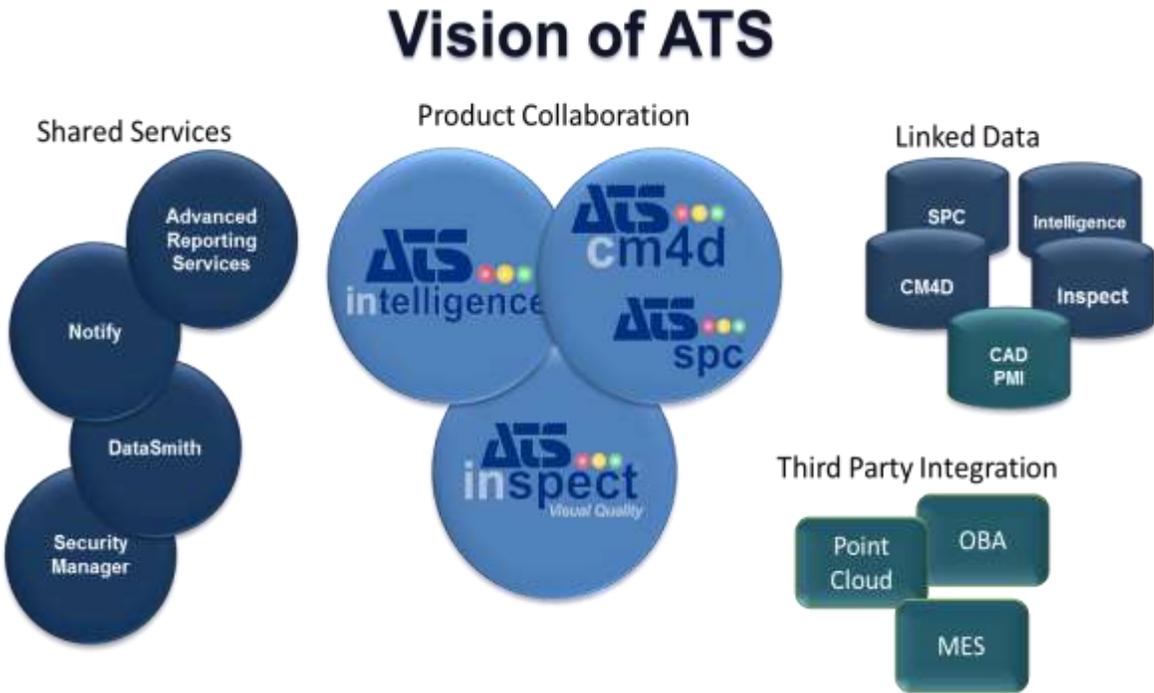
Figure 1 - The Data Spectrum of ATS ADOS (Source ATS International)

## ATS ADOS Product Collaboration



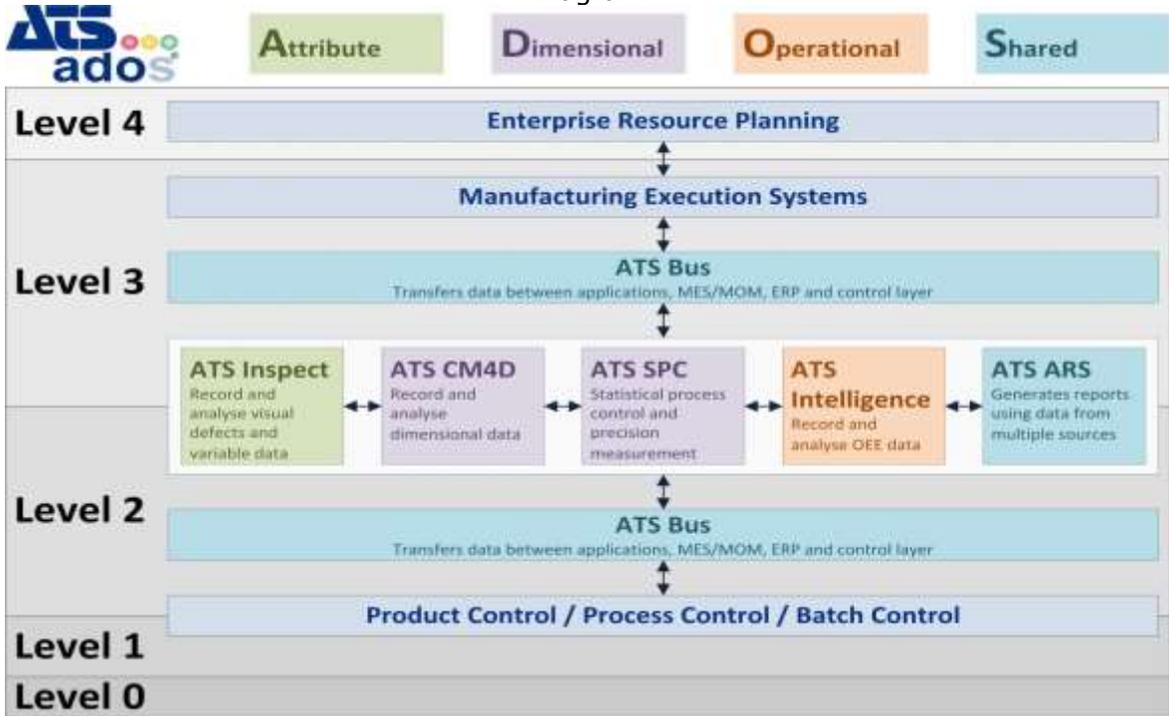
Source: ATS International

Figure 2 - The ATS ADOS Products and Shared Services



Source: ATS International

Figure 3 - The ATS ADOS Communication Diagram



Source: ATS International

## Significance of New Product Innovation

Ultimately, growth in any organization depends upon 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, differentiating from the competition. This three-fold approach to delivering New Product Innovation is explored further below.



## 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, we evaluated two key factors—New Product Attributes and Customer Impact—according to the criteria identified below.

### New Product Attributes

- Criterion 1: Match to Needs
- Criterion 2: Reliability
- Criterion 3: Quality
- Criterion 4: Positioning
- Criterion 5: Design

### Customer Impact

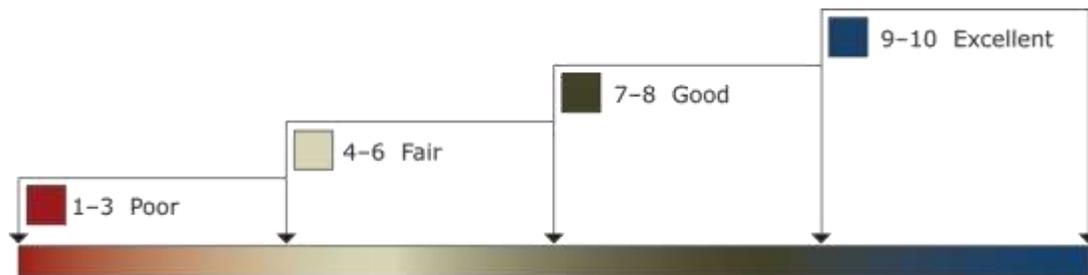
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

## Best Practice Award Analysis for ATS International

### *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 analyse 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 New Product Attributes and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria 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 players as Competitor 2 and Competitor 3.

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
<b>New Product Innovation</b>	New Product Attributes	Customer Impact	Average Rating
<b>ATS International</b>	<b>9.0</b>	<b>9.0</b>	<b>9.0</b>
Competitor2	8.0	8.0	8.0
Competitor3	8.0	7.0	7.5

### *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 functionality

**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 like 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**

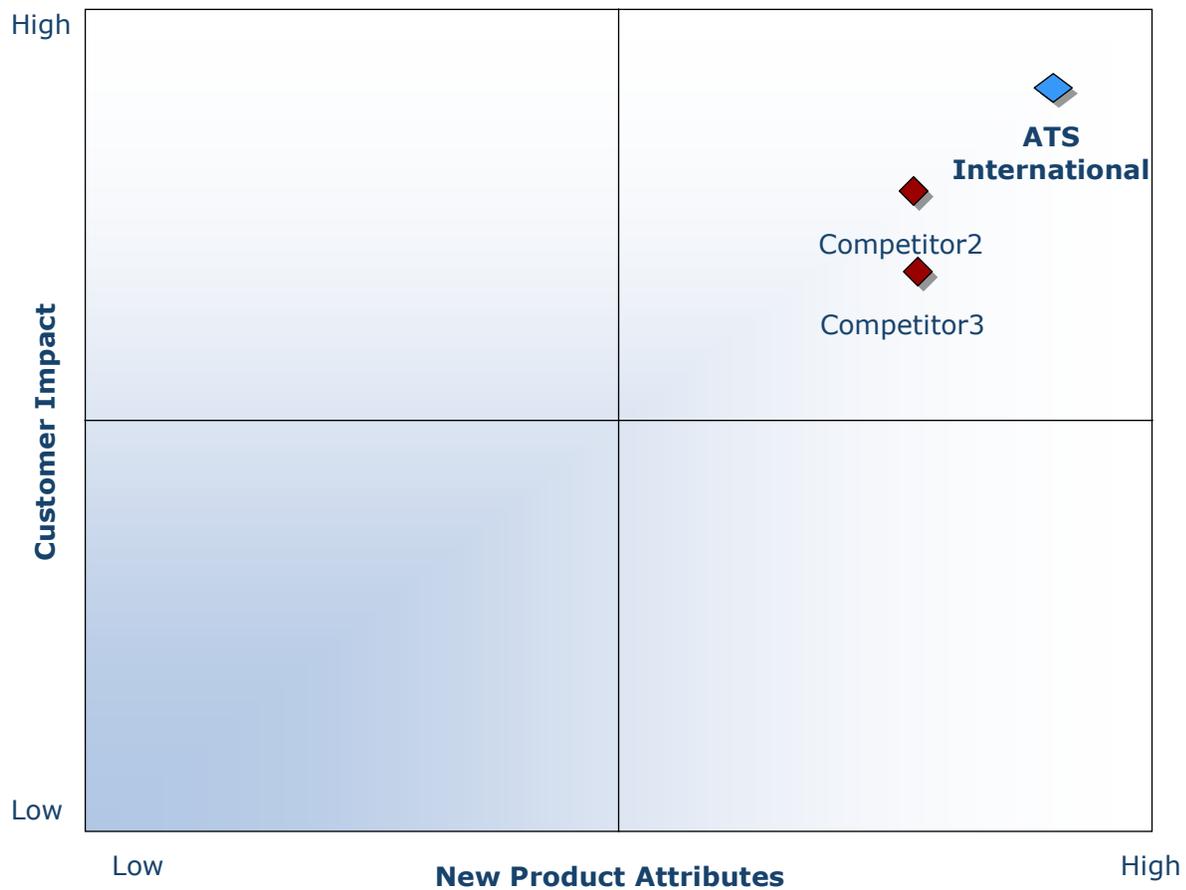
Requirement: Customer service is accessible, fast, stress-free, and of high quality

**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 can 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.



## 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 players and for identifying those performing at best-in-class levels.

### 360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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

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

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 <b>Monitor, target, and screen</b>	Identify award recipient candidates from around the globe	<ul style="list-style-type: none"> <li>• Conduct in-depth industry research</li> <li>• Identify emerging sectors</li> <li>• Scan multiple geographies</li> </ul>	Pipeline of candidates who potentially meet all best-practice criteria
2 <b>Perform 360-degree research</b>	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> <li>• Interview thought leaders and industry practitioners</li> <li>• Assess candidates' fit with best-practice criteria</li> <li>• Rank all candidates</li> </ul>	Matrix positioning all candidates' performance relative to one another
3 <b>Invite thought leadership in best practices</b>	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> <li>• Confirm best-practice criteria</li> <li>• Examine eligibility of all candidates</li> <li>• Identify any information gaps</li> </ul>	Detailed profiles of all ranked candidates
4 <b>Initiate research director review</b>	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> <li>• Brainstorm ranking options</li> <li>• Invite multiple perspectives on candidates' performance</li> <li>• Update candidate profiles</li> </ul>	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 <b>Assemble panel of industry experts</b>	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> <li>• Share findings</li> <li>• Strengthen cases for candidate eligibility</li> <li>• Prioritize candidates</li> </ul>	Refined list of prioritized award candidates
6 <b>Conduct global industry review</b>	Build consensus on award candidates' eligibility	<ul style="list-style-type: none"> <li>• Hold global team meeting to review all candidates</li> <li>• Pressure-test fit with criteria</li> <li>• Confirm inclusion of all eligible candidates</li> </ul>	Final list of eligible award candidates, representing success stories worldwide
7 <b>Perform quality check</b>	Develop official award consideration materials	<ul style="list-style-type: none"> <li>• Perform final performance benchmarking activities</li> <li>• Write nominations</li> <li>• Perform quality review</li> </ul>	High-quality, accurate, and creative presentation of nominees' successes
8 <b>Reconnect with panel of industry experts</b>	Finalize the selection of the best-practice award recipient	<ul style="list-style-type: none"> <li>• Review analysis with panel</li> <li>• Build consensus</li> <li>• Select winner</li> </ul>	Decision on which company performs best against all best-practice criteria
9 <b>Communicate recognition</b>	Inform award recipient of award recognition	<ul style="list-style-type: none"> <li>• Present award to the CEO</li> <li>• Inspire the organization for continued success</li> <li>• Celebrate the recipient's performance</li> </ul>	Announcement of award and plan for how recipient can use the award to enhance the brand
10 <b>Take strategic action</b>	The award recipient may license the award for use in external communication and outreach to stakeholders and customers	<ul style="list-style-type: none"> <li>• Coordinate media outreach</li> <li>• Design a marketing plan</li> <li>• Assess award's role in future strategic planning</li> </ul>	Widespread awareness of recipient's award status among investors, media personnel, and employees

## 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 almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.