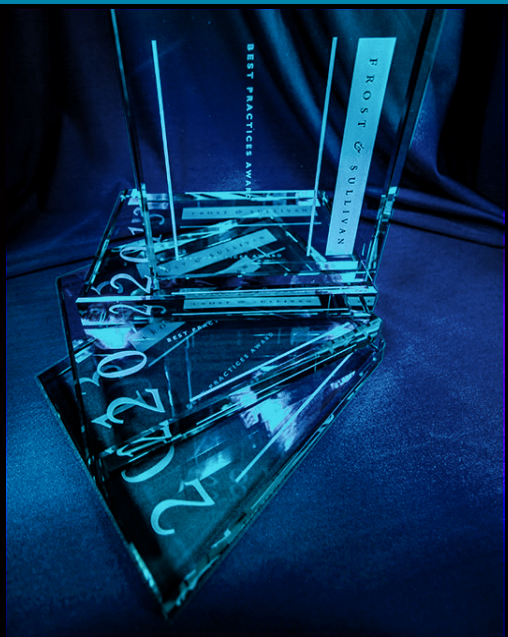


F R O S T & S U L L I V A N

Carestream

## 2016 North American Medical Imaging New Product Innovation Leadership Award



FROST & SULLIVAN

**BEST**  
**2016 PRACTICES**  
**AWARD**

NORTH AMERICAN MEDICAL IMAGING  
NEW PRODUCT INNOVATION LEADERSHIP AWARD

**2016**  
**BEST PRACTICES**  
**AWARDS**

## Contents

Background and Company Performance .....	3
<i>Industry Challenges</i> .....	3
<i>New Product Attributes and Customer Impact</i> .....	3
<i>Conclusion</i> .....	8
Significance of New Product Innovation .....	9
Understanding New Product Innovation .....	9
<i>Key Benchmarking Criteria</i> .....	10
Best Practice Award Analysis for Carestream Health .....	10
<i>Decision Support Scorecard</i> .....	10
<i>New Product Attributes</i> .....	11
<i>Customer Impact</i> .....	11
<i>Decision Support Matrix</i> .....	12
The Intersection between 360-Degree Research and Best Practices Awards.....	13
<i>Research Methodology</i> .....	13
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices.....	14
About Frost & Sullivan .....	15

## Background and Company Performance

### *Industry Challenges*

Value is rising as the single biggest imperative for the U.S. healthcare system. Every process, every type of service and every stakeholder across the healthcare value chain, is being re-assessed and reconsidered for the value, or the lack of value, that it brings to the system. In the medical imaging market, an era of value-based imaging is emerging that marks a clear end to many of the paradigms that have prevailed in the past.

For medical imaging vendors, the emergence of value-based imaging means their value proposition must be revisited, and their innovation efforts recalculated, so that they align well with their customers' specific technology needs, evolving service expectations, and adequate payment models. In this context, innovation that has limited implications on actual value and the "do more, earn more" mentality that have prevailed under the volume-driven fee-for-service paradigm, are becoming less and less sustainable models of technology adoption today.

As imaging providers accelerate their development of value-based purchasing frameworks internally, and as their payment models start to shift to outcome, quality or value-based payments, technology innovation is expected to act as an enabling and value-adding factor, not as a cost driver or limiting factor in these evolutions. In other words, in order to be viable, new technology investments must have a positive and demonstrable impact on the cost efficiency, the quality and the outcome of imaging enterprises' service lines.

Though they might be less available than they were a few years ago, capital dollars in the U.S. medical imaging market will likely continue to be invested into the latest and greatest technologies; imaging providers in this technology-driven market will continue to sponsor industry innovation that pushes the boundaries of their clinical capabilities. However, imaging providers are demanding a holistic value proposition from their vendors that further serves to enhance the value, profitability and marketability of their radiology practices. This is what constitutes perhaps the biggest challenge on medical imaging and informatics vendors today.

### *New Product Attributes and Customer Impact*

A number of best practices transpired from the multitude of new technologies and innovative products introduced by Carestream Health ("Carestream") throughout 2015. More than a discrete set of new products and technologies, they collectively reveal a connecting thread that validates Carestream's commitment to meaningful innovation: that is, innovation that solves today's real-life problems and addresses unmet customer needs, while preparing them for the challenges of tomorrow. By empowering numerous new points-of-care and specialties with advanced, easy-to-use and cost effective imaging

modalities, Carestream is expanding its value proposition well beyond centralized medical imaging departments, which it continues to cater to through its best-of-breed imaging and informatics solutions, to areas such as orthopedics, intensive care, emergency department, intra-operative, and bedside imaging.

### **Match to Needs**

Carestream is one of a very few vendors who have continued to capitalize on a longstanding commitment of developing and advancing a full suite of diagnostic imaging products and solutions.

Its flagship DR product, with its best-of-breed detector technology that has been developed in-house, which is now going into its third-generation, is a result of this strategic decision made many years ago. Carestream has built a powerful track record closely matching its product innovations with real market needs in the general radiography area.

As a leader in the digital radiography (DR) market, Carestream was the first vendor to introduce (in 2009) a portable, wireless, cassette-sized DR detector, and was the instigator of the “DR retrofit” offerings in this market. Through these extremely powerful and versatile solutions, Carestream has helped hundreds of facilities transition to DR cost-effectively. Essentially, Carestream took its customers to a higher level of workflow productivity, dose efficiency and image quality without incurring hefty investments.



This is exactly the kind of value proposition that was needed in the highly aspiring, but cost-sensitive diagnostic radiography marketplace. Now, as the transition to digital radiography in the U.S. market reaches its maturity, Carestream remains ideally positioned for continued leadership with this fundamental modality for medical imaging enterprises. The latest unveiling of the DRX Plus detector, which has been enhanced considerably compared to its predecessors, is illustrative of this leadership position for Carestream.

### **Customer Purchase Experience**

Carestream is now well on track to replicating its winning general radiography value proposition in the fluoroscopy departments with the launch of innovative multi-purpose fluoroscopy/radiography equipment in 2015. The introduction of DRX-Excel Plus, which



marks Carestream's entry into the fluoroscopy market, is the company's response to the relative lack of product and technology innovation in this specialty area. With many fluoroscopy procedures shifting to computed tomography (CT) procedures, Carestream recognized the opportunity to bring back credibility and interest into fluoroscopy, which is an under-exploited, powerful and cost-effective imaging modality.

Leveraging Carestream's unique X-Factor approach in this new platform means providers gain tremendous cost-effectiveness, by being able to share flat-panel detectors among multiple radiography and fluoroscopy rooms and systems. The system's multi-purpose functionality allows smaller facilities to benefit from more optimal real-estate utilization while larger facilities benefit from more complete asset utilization. The wide range of productivity-enhancing capabilities built into the system, which Carestream is well-known for across its solutions portfolio, further serve to revive the future of diagnostic and interventional fluoroscopy.

## Design

Carestream's recent entry into the ultrasound modality offers a perfect example of the design philosophy at the company. The new Touch Prime and Touch Prime XE premium ultrasound imaging systems, introduced in 2015, reflect the importance that Carestream places on performance and usability across its product lines. For having developed these new ultrasound systems from the ground-up, Carestream was able to prioritize and optimize their features based on the current needs, and actual preferences, of ultrasound professionals.

Carestream has spurred a significant innovation drive in ultrasound with this new product line. Notably, their all-touch control panel, which is extremely easy to clean for better hygiene, and yet offers the tactile feedback on the home keys that operators need to be able to stay focused on the patient, is garnering impressive appraisal from the marketplace. The user interface can be customized to the preferences of the sonographer. Clearly, the extensive research and development effort that Carestream has put out to design the perfect combination of performance, flexibility,





image quality in a scalable platform, is already starting to pay off for the company.

## Positioning

Catering effectively to the premium and ultra-premium radiology markets, the new Touch Prime and Touch Prime XE systems form the proper blend of advanced imaging capabilities and superior system performance needed in these customer segments. This



owes to a variety of technical innovations developed by Carestream including integrated GPU processing and the proprietary SynTek architecture, which yield a high level of computing power and enhanced spatial detail at very high frame rates.

Furthermore, these new products are positioned as the first two models of a brand new generation of ultrasound systems for Carestream. The product line is designed to

grow and expand by leveraging their scalable high-performance platform, which promotes both technology migration as well as transducer migration. As such, they offer an ideal entry point for Carestream into ultrasound, setting the stage for a gradual expansion into less demanding areas such as mid-range and point-of-care ultrasound.

## Price/Performance Value

Offering unrivaled value and performance for the right price is a common attribute of Carestream's products across the portfolio. It is also part of Carestream's vision and values, as it seeks to continually advance the medical imaging marketplace through new technology. A good illustration of that is the cone-beam CT<sup>1</sup> (CBCT) solution that the company is developing for orthopaedic imaging, now in its final stages of product development and being investigated and perfected with clinical partners.

With this new solution, it is evident that Carestream realized that there is still an important gap today in the gamut of diagnostic radiography modalities available to specialists in areas such as orthopaedic and sports medicine. Between 2-D X-ray systems, such as digital radiography (DR) on one hand and computed tomography (CT) on the other hand, the industry is in dire need of a cost-effective, low-dose, 3-D and weight-bearing

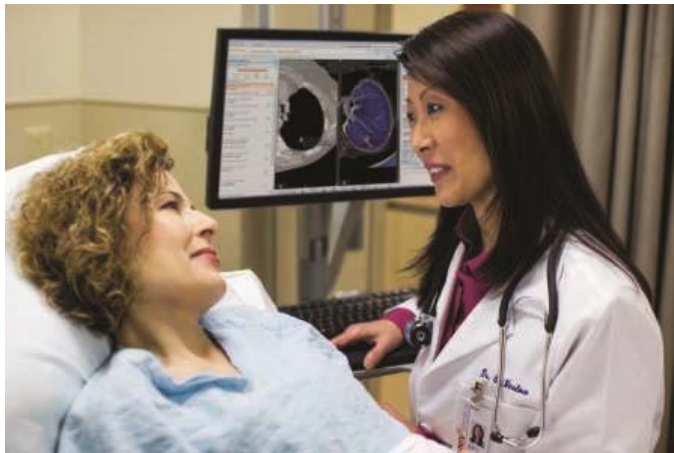


<sup>1</sup> INVESTIGATIONAL: Not Available for Commercial Sale

imaging technique. With cone-beam CT, in which Carestream has already built a solid track record with dental applications, the company is looking to unite the best of both modalities: namely the high-resolution, three-dimensional imaging capabilities of CT, with the speed, convenience, radiation dose efficiency and affordability of DR.

### Customer Ownership Experience

Complementing the growing portfolio of imaging equipment, Carestream's imaging informatics solution set serves to solidify the company's overall value proposition to an extended imaging enterprise. Focusing on core imaging department workflow in radiology cardiology, and all the way to every point of care where imaging services are consumed, Carestream has continued to develop an edge with its enterprise imaging IT portfolio. Notably, Carestream has recently elevated its clinical content management to a third-generation vendor-neutral, standards-based platform. Its industry-leading data



aggregation and data federation capabilities allow Carestream to integrate many more types of multi-disciplinary and unstructured content into the clinical workflow. This includes images, photos, videos, scanned documents and other types of content that are often silo'ed and inaccessible by the care team. Along the same lines, Carestream's enterprise viewer capabilities have continued to evolve in depth and in breadth, and have

embraced quantitative imaging as one of the next frontiers for the imaging discipline. Carestream customers can easily realize on-going value by simply expanding their current PACS to a true enterprise imaging platform, without disruption to the end-users or significant cost.

Today, Carestream's Clinical Collaboration Platform stands out as a pioneering, innovative and best-of-breed tool in the marketplace. In fact, several years ago Carestream was among the very first vendors to recognize the importance of expanding image access beyond the walls of the radiology department, developing solutions for referring physician and patient access to imaging reports. Today, these multimedia-enabled interactive reports and portals are some of the most important value-adding elements that radiology enterprises are seeking to differentiate their services to their clinician and patient communities.

## *Conclusion*

2015 has been a tremendous year for innovation at Carestream, marked by several important milestones and successful product launches. Collectively, these technological developments and new products exemplify the innovation strategy that Carestream strives to instill across its portfolio, focused on high value and alignment to market needs. Together, they serve to strengthen the holistic value proposition of Carestream in medical imaging, and its brand perception as an innovative vendor who listens closely to customers and is attentive to market needs.

In recognition of its sustained innovation drive and continued success over the last several years, Carestream Health is recognized with the 2016 North American New Product Innovation Leadership Award in the Medical Imaging market.



## Significance of New Product Innovation Leadership

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, 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 Leadership Award, Frost & Sullivan analysts independently 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

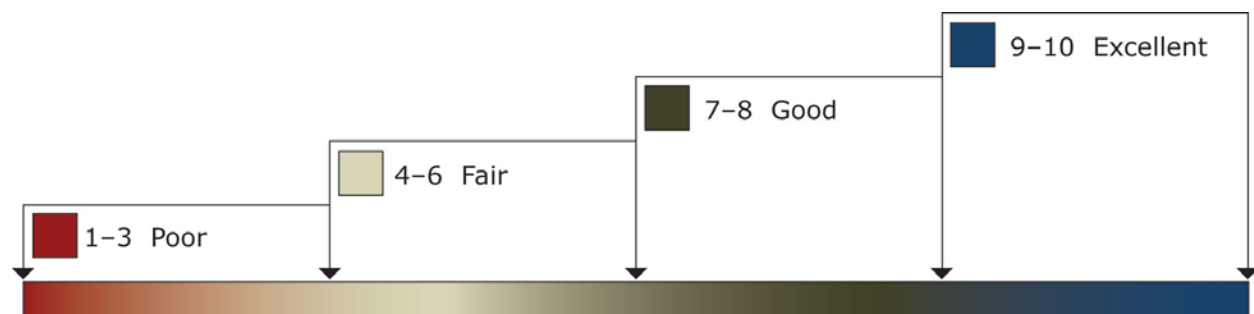
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

## Best Practice Award Analysis for Carestream Health

### 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 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 Competitor2 and Competitor3.

<i>Measurement of 1–10 (1 = poor; 10 = excellent)</i>			
<b>New Product Innovation</b>	New Product Attributes	Customer Impact	Average Rating
Carestream Health	10.0	9.0	9.5
Competitor 2	9.0	8.0	8.5
Competitor 3	8.0	8.0	8.0

## *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**

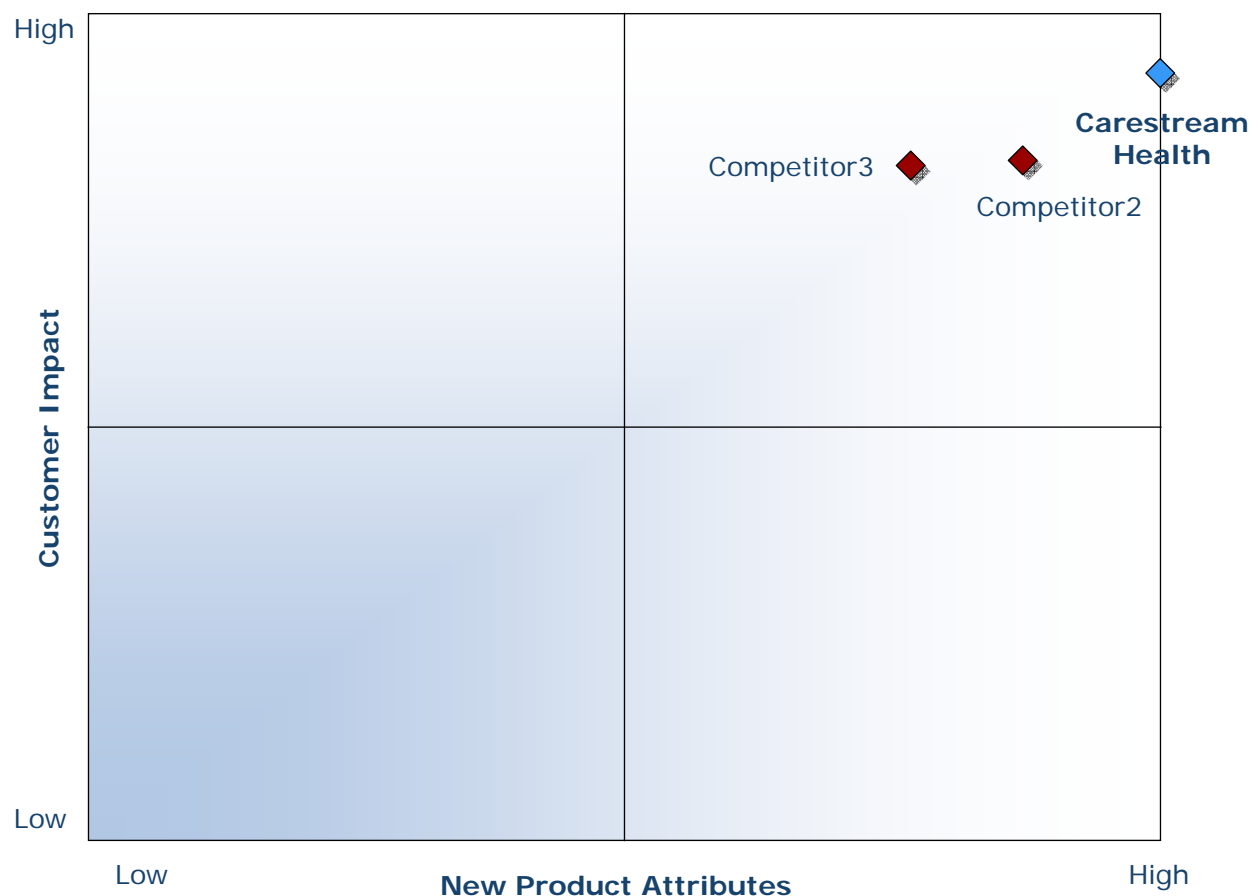
Requirement: Customer service is accessible, fast, stress-free, and of high quality

**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 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 <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>	Upon licensing, company may share award news with 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>.