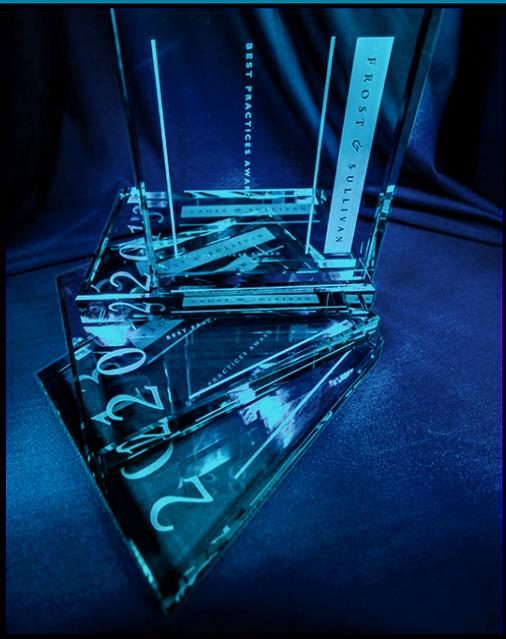




2016 Global  
Intelligent Fluid-flow Equipment  
Product Line Strategy Leadership Award



FROST & SULLIVAN

BEST  
2016 PRACTICES  
AWARD

GLOBAL  
INTELLIGENT FLUID-FLOW EQUIPMENT  
PRODUCT LINE STRATEGY LEADERSHIP AWARD

2016  
BEST PRACTICES  
AWARDS

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## Background and Company Performance

### *Industry Challenges*

In today's world, the task of successfully establishing and managing commercial buildings and manufacturing plants in light of rising energy costs and stringent green governance measures is marred with challenges and can prove to be both onerous and expensive for building owners to say the least. The engineers of the future need to ensure commercial/high-rise buildings and "smart" industrial plants are "green" and sustainable with state-of-the-art plumbing design that saves building owners millions of dollars annually.

In fact, it can also be iterated that one of the most pressing concerns that plant/building owners generally face are the increasing or expanding environmental regulations. Companies that have a global presence, especially, end up having to deal with this issue because regulations vary from country to country, making it extremely difficult to integrate their operations globally. From an expenditure point of view, this is an even bigger issue, because, sometimes utilities with large-scale programs are required to adhere to severe federal or state regulations such as meeting drinking water quality standards, nutrient removal, and the like. In such situations, companies find it extremely difficult to balance these additional expenses with deferred infrastructure maintenance.

Another major concern that plant/building owners often face is the extremely high installed and operating costs of plumbing and fluid equipment fitted in the structure. Having summarized the challenges that are currently faced by building/plant owners across the globe, it is critical to evaluate how these roadblocks can be overcome and also analyze what efforts fluid systems equipment manufacturers are taking in this regard.

The leading contenders within the flow-fluid equipment market, therefore, are struggling to develop holistic products and solutions that will play a proactive role in enhancing the experiences of their clients from a monetary as well as performance standpoint. In addition, solution providers need to ensure that applications can be scaled to the changing technological environment, either automatically or as per demand.

Therefore, the suppliers of flow-fluid equipment should focus on developing a complete ecosystem of products and solutions that will provide end-to-end support in terms of deploying, managing, and scaling business-critical, water-related challenges so as to stay ahead of the globally expansive fluid-flow equipment market.

### *Product Line Strength and Customer Impact*

#### **Technology Leverage**

Founded in 1934, Canada-based Armstrong Fluid Technologies (Armstrong), a world leader in the manufacture of intelligent fluid-flow equipment, has supported companies from across the globe for more than 80 years by developing technologically advanced

products and solutions that cater to every need of plant and building owners' water-related challenges. In recent times, the company has introduced some cutting-edge, ground-breaking technologies that systematically address every pressing concern that its customers are currently facing in the fluid-flow segment.

Unlike its competitors, the spectrum of products and solutions that Armstrong provides under the umbrella of "Design Envelope Technology" is entirely aimed at offering some of the smartest, greenest, and most cost-effective fluid-flow solutions, which further helps to emphasize the company's commitment to address the key requirements of its clients.

The amount of effort that Armstrong invests in its products can be best displayed by illustrating and elaborating on the methodology that the company uses while manufacturing the Design Envelope pumps and systems. First, the equipment is integrated with variable speed controls. This is followed by an optimization process wherein the various components of the pump including the motor, the control, and the hydraulics are perfectly matched. As a second step, a team of experts effectively tests every single one of these pumps and performs highly automated testing, incidentally making them perform at its maximum potential while also giving the equipment a unique fingerprint.

The functionality of Armstrong's Design Envelope IVS pumps is such that, with the help of optimized impeller size and speed control, it adopts a whole new mechanism of "demand-based pumping" under variable speeds, wherein the equipment utilizes only the amount of energy it requires to meet the current system's demand at any given time. This technique that the equipment uses contributes immensely towards cost-cutting, reducing operating expenses of pumps, and achieving nearly 70% energy savings at 50% peak load while steadily enhancing performance of HVAC systems. This enables adaptability to changes that a building experiences during its operating life.

Armstrong's ability to produce solutions that meet customers' needs is best demonstrated by the increasing deployment of Design Envelope pumps and systems equipment for various plumbing and water supply applications in different projects across geographies including North America, Europe, Asia-Pacific, and the Middle East.

## **Features**

Armstrong's array of pumping products and solutions are designed to ensure that they are absolutely user-friendly and easy to install so as to further reduce downtime and impact the time incurred by clients.

Design Envelope 4302 Dualarm Pumps and Design Envelope 4312 Twin Pumps can be illustrated as key best practice examples to assert the significance and excellence of Armstrong's product line.

The Design Envelope 4302 Dualarm Pump's features include cutting-edge, on-board intelligent variable speed controls equipped with what Armstrong calls a "Sensorless" technology. The Sensorless technology that each pump is equipped with recognizes that there is a direct relationship between the four different operating parameters for a pump. The functionality of this pump is such that it operates at the actual power and speed (which is, it absorbs power by nature of what demand is placed on it) to deliver a particular head and flow. Hence, at any given power speed operating point, there is a unique head flow operating point which then gets mapped with the help of the integrated variable speed controls, thereby allowing the team of experts to precisely calculate the head and flow requirement for any given operating point without the help of any measuring system in place.

The Design Envelope 4312 Twin Pumps, on the other hand, is a pipe-mouthed, 2-pump unit with integrated intelligent controls designed especially for space-saving installation purposes. The pump renders superior energy performance and is deployed mostly for duty/standby operations. One of the greatest benefits of this pump is that it allows 75% more energy savings compared to traditional constant speed or variable frequency operated pump prototypes produced by its competitors. The 2-pump casing feature of this product contributes immensely towards reduced footprint while the integrated intelligent controls eliminate procurement, installation, calibration, and upkeep of different pressure sensors.

Through capabilities that the Design Envelope 4302 Dualarm Pumps and Design Envelope 4312 Twin Pumps offer, Armstrong has placed itself at the forefront of the competition.

### **Price/Performance Value**

Effectively meeting specific customer needs, delivering high-quality products with excellent performance value, and enhancing customers' purchase experience are some important practices that companies in the industry need to adopt to stay ahead of the competition.

In strict accordance with the unique value proposition that it renders, Armstrong aspires to build products and solutions that offer the best performance and the lowest installation cost in addition to providing the company with a competitive advantage in the globally expansive intelligent fluid-flow market.

#### **Best Practice Example:**

The Design Envelope 4300 Pump reflects the company's innovative resourcefulness in developing comprehensive solutions that guarantee superior energy performance, reduce costs significantly, and use up to 60% less floor space compared to its competitors' pump configurations. The product's application is predominantly pump and control for HVAC-systems that are fitted with integrated controllers which reduce energy consumption by

nearly 75% when compared to traditional constant speed or variable frequency operated pump installations.

The Design Envelope 4300 pump delivers unparalleled features and benefits including the lowest operating risk, operating cost, and installed cost, coupled with the least environmental footprint when compared to other traditional pumps manufactured by Armstrong's peers in the industry.

In a marketplace where the aforesaid factors are absolutely essential for successful deployment of low-cost and low energy-consuming pumping solutions, Armstrong's products are distinctly ahead of the competition due to their ability to offer the best value for money to their customers.

### **Customer Purchase Experience**

One of the most important success factors for Armstrong is its constant drive to address customer needs by providing high-performance solutions with robust value-added benefits and by focusing on improving its clients' competitive position in their respective domains of operation. It aims to establish itself as a partner for its clients, offering them comprehensive solutions for their projects.

#### **Best Practice Example:**

For instance, in the fluid-flow equipment market for buildings and plants, Armstrong served the industrial facility of a major chemical company and manufactured large-format cells and batteries over a 400,000 square-foot manufacturing center. The manufacturing facility's capacity totaled 600 million watt hours of large-format, affordable lithium-ion batteries and needed a comprehensive solution to address its HVAC needs. The company approached Armstrong for this project. The challenge was that the company suggested they deploy horizontal base-mounted pumps for the job, which is more expensive from a cost standpoint as well as on the energy-savings front. However, a team of experts from Armstrong along with Michigan Air (the local Armstrong representative) worked together on the design of the HVAC system and suggested the deployment of Vertical In-Line pumps instead and the results were phenomenal. With the installation of ten 4300 Vertical In-Line pumps to support a nearly 7,000 ton process cooling system, the company benefited immensely in terms of labor savings and floor-space congestion. Moreover, the pumps are easy to maintain and service, and require no alignment whatsoever, making it absolutely user-friendly and top-notch in terms of the customer purchase experience.

Thus, by providing customers with solutions that impeccably address their every requirement, Armstrong truly enhances its customer purchase experience.

## Customer Service Experience

Being able to deliver world-class solutions to companies in the intelligent fluid-flow market segment may be addressing just one leg of the clients' requirements. In fact, 100% client satisfaction cannot be met if service providers do not offer their clients with the best-in-class support system so as to ensure that their current systems are always working in top condition and delivering impeccable results.

Armstrong does everything right when it comes to meeting customer satisfaction, and it strives to give its customers a service experience like no other: the company offers a range of services starting from assisting its clients by assessing a particular plant or building's load requirements and evaluating the operating point the building's system is originally at. After evaluating and comprehending the load requirements of a structure, a team of experts goes on to deploy and commission a customized range of products and pump systems equipment and offers the building/plant a high-performance, low-cost solution.

The company designs, manufactures, and maintains the pumping needs of a structure by supplying the latest fluid-flow and control technology for any type of undertaking and installations. The applications are as varied as HVAC, plumbing, fire safety, or enhancement of the building's performance.

## Brand Equity

Armstrong has a strong focus on enhancing its brand visibility by expanding its partner ecosystem and conducting symposiums and workshops of its wide array of products at international industry events. Due to its top quality and highly effective services and solutions, Armstrong often sees its clients renewing their contracts.. The company uses these events as a means to enhance its brand reputation, promote its products and solutions, gather information on some of the unmet needs of its customers in that geography, and also as an effective platform to demonstrate its solutions' capabilities in front of a wider audience.

The key differentiating factor for Armstrong is that it functions more as a partner to its clients unlike some of its competitors, besides offering optimized Design Envelope pumps and equipment, and works with them to improve the quality of the solutions offered. The company makes an effort to meet the development committee on a weekly basis to discuss product-, process-, and customer-related issues to find ways and means to address them. This enhances Armstrong's brand image.

Moreover, as Armstrong deals with major sales and distribution companies to circulate its products, it keeps them in the loop, constantly checking for feedback to ensure that the delivery services are in line with customer requirements.

## *Conclusion*

Leveraging its profound expertise in the intelligent fluid-flow industry, Armstrong Fluid Technologies fabricated its Design Envelope Technology effectively for precise application deployment. By seeking timely feedback from customers and implementing it in its product portfolio, Armstrong strives to effectively address unmet customer needs and positions itself at the forefront of competition.

With its strong overall performance, Armstrong Fluid Technologies has earned Frost & Sullivan's 2016 Product Line Strategy Award.

## Significance of Product Line Strategy

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again. A full, comprehensive product line that addresses numerous customer needs and preferences is therefore a critical ingredient to any company's long-term retention efforts. To achieve these dual goals (customer value and product line strength), an organization must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



## Understanding Product Line Strategy Leadership

As discussed above, driving demand, brand strength, and competitive differentiation all play a critical role in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on building a superior and comprehensive product line.

## Key Benchmarking Criteria

For the Product Line Strategy Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Product Line Strength and Customer Impact—according to the criteria identified below.

### Product Line Strength

- Criterion 1: Breadth
- Criterion 2: Scalability
- Criterion 3: Technology Leverage
- Criterion 4: Features
- Criterion 5: Supply Chain Reliability

### Customer Impact

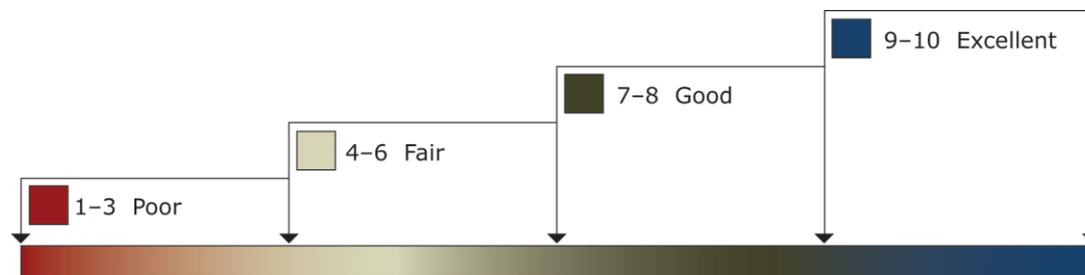
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

## Best Practice Award Analysis for Armstrong Fluid Technologies

### 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 Product Line Strength 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.

**DECISION SUPPORT SCORECARD FOR PRODUCT LINE STRATEGY LEADERSHIP AWARD**

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
<b>Product Line Strategy</b>	Product Line Strength	Customer Impact	<b>Average Rating</b>
<b>Armstrong Fluid Technologies</b>	<b>7</b>	<b>9</b>	<b>8</b>
Competitor 2	5	5	5
Competitor 3	6	7	6.5

*Product Line Strength*

**Criterion 1: Breadth**

Requirement: Product line addresses the full range of customer needs and applications

**Criterion 2: Scalability**

Requirement: Product line offers products at a variety of price points and functionality levels

**Criterion 3: Technology Leverage**

Requirement: Demonstrated commitment to incorporating leading edge technologies into product offerings, for greater product performance and value

**Criterion 4: Features**

Requirement: Products offer a comprehensive suite of features to serve customers at multiple levels of functionality, ease of use and applications

**Criterion 5: Supply Chain Reliability**

Requirement: There is sufficient control over the supply chain to ensure availability of key components and thereby the availability of products in the product line

*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

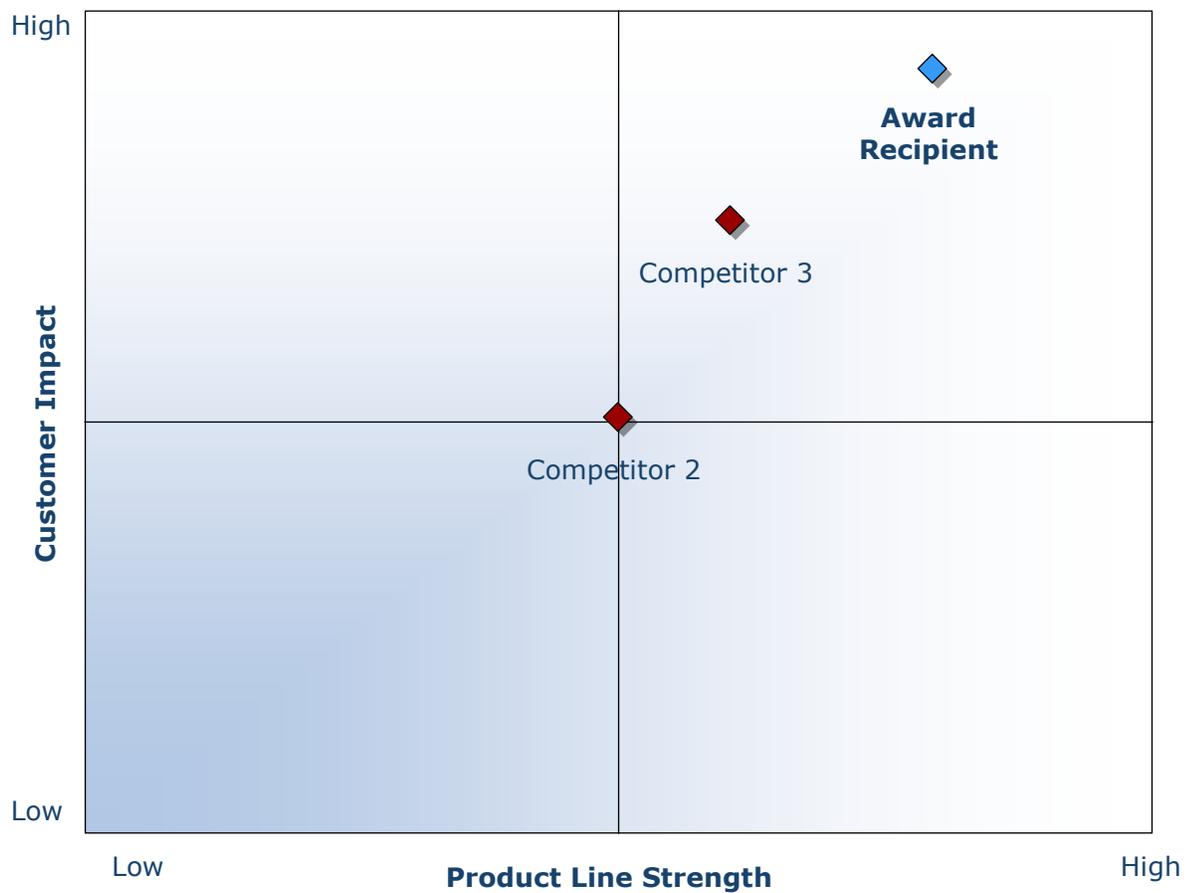
**Criterion 5: Brand Equity**

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.

DECISION SUPPORT MATRIX FOR PRODUCT LINE STRATEGY LEADERSHIP AWARD



## 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>	Once licensed, 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>.