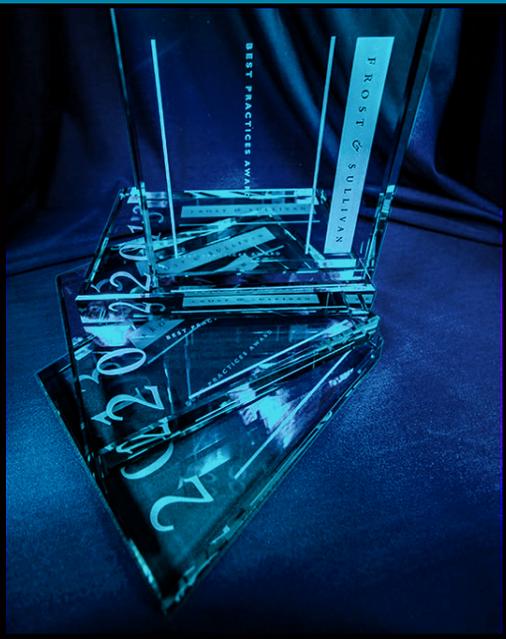


FROST & SULLIVAN



TIVO®

2016 Global Consumer Video Entrepreneurial Company of the Year Award



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BEST
2016 PRACTICES
AWARD

GLOBAL CONSUMER VIDEO
ENTREPRENEURIAL COMPANY OF THE YEAR AWARD

2016
BEST PRACTICES
AWARDS

Contents

| | |
|--|----|
| Background and Company Performance | 3 |
| <i>Industry Challenges</i> | 3 |
| <i>Entrepreneurial Innovation and Customer Impact</i> | 3 |
| <i>Conclusion</i> | 8 |
| Significance of Entrepreneurial Leadership..... | 9 |
| Key Benchmarking Criteria | 9 |
| Best Practice Award Analysis | 10 |
| <i>Decision Support Scorecard</i> | 10 |
| <i>Entrepreneurial Innovation</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

The Pay TV industry is in the midst of a challenging disruption, as it consistently loses ground to OTT video. Subscribers for online video services globally will grow at nearly 20% CAGR from 2015-2021 (according to Frost & Sullivan). Nielsen reports that streaming service household penetration may surpass DVR penetration in the US in 2016 - and that younger audiences are watching more online TV than traditional broadcast TV. At the same time, traditional Pay TV subscriber numbers continue to be stagnant or gradually fall. Pay-TV service providers (including MSOs, telcos, and DTH service providers) are pressured to counter this cord-cutting juggernaut and harness the elusive monetization potential of online consumption. Frost & Sullivan independent research reveals that managed quality experiences in the context of fragmented content sources and unmanaged devices is one key aspect of solving this challenge. Leveraging analytics to drive targeted and addressable advertising is the other.

Frost & Sullivan believes that this transition from TV by appointment towards on-demand, anytime-anywhere content experiences presents a clear challenge and an exciting opportunity for technology vendors. Traditional electronic program guides (EPGs) are giving way to personalized digital storefronts. TV channel brands are becoming secondary to specific content titles or series. Closed set top boxes are being replaced by open, multi-service consumer devices. While intellectual property and innovative products remain relevant, market conversations and operator buying preferences are shifting towards end-to-end business solutions.

Frost & Sullivan agrees that technology vendors who are able to navigate the arduous challenge of transforming organically, making strategic acquisitions and repositioning their core competencies to meet today's customer and industry needs are best positioned to maintain and grow market relevance in the new media age. This demands a true entrepreneurial mindset - which is far removed from the tendency to carry on business as usual. It also requires a fundamental transformation of business priorities and culture within the organization. The Frost & Sullivan Global Entrepreneurial Company of the Year Award recognizes TiVo (formerly Rovi Corporation) for decisively crafting and aggressively executing its modernization strategy.

Entrepreneurial Innovation and Customer Impact

Market Disruption

TiVo has moved decisively and rapidly to bring closely-related competencies under the same roof, with both speed and focus. The strategic acquisition of TiVo brings together companies with complementary products and services and innovative patented technologies. Rovi's existing strength in guides, advertising, and analytics was well complemented by TiVo's strengths in OTT on-demand UX and content discovery. The new

TiVo successfully combines discovery components, such as metadata, guides, and search & recommendation, as well as monetization components - including competitive OTT devices, return path data, and advertising.

TiVo today is a much more diversified company with a forward-looking solutions approach. The combined company is expected to make more than US\$800 million in revenue in 2017 after purchase accounting adjustments. In an industry where content consumption is becoming ever more fragmented and unpredictable, TiVo has staked out its intention to solve hard challenges through innovation and transformation. The company is nicely reshaping its core competencies into solutions that are intended to restore service providers to a front-and-center role in consumer entertainment.

Market Gaps

Market gaps exist today for operators as well as for customers. Operators are grappling with the battle for survival in an OTT-first environment. Even Tier 1 operators are challenged to determine reliable best practices and roll out production-grade solutions. Content businesses are simply not equipped to effectively select and integrate individual product components and stitch them together internally. Across the board, there is a clear and dire need for complete monetization solutions.

Operators face the pressing challenge of monetization of content services, in no small part due to market immaturity and lack of audience scale. Targeted advertising is a representative example of how monetization has failed to achieve its full potential thus far. The potential for targeted advertising to drive up CPMs and push OTT services to profitable revenue levels is well known. Frost & Sullivan research suggests that problems hindering progress include lack of ad inventory, lack of addressability, inadequate audience pools to enable meaningful targeting, and weak ability to report back and playback data.

Frost & Sullivan firmly believes that TiVo today is well positioned to attack this problem on two fronts. First, through its own competitive and recently redesigned consumer device, the company has a concrete presence in millions of households. Second, the company already has rights from several operators already to gather bi-directional data - and this footprint is expected to increase. TiVo directly or indirectly serves over 20 million households through their guides. Cumulatively, TiVo reportedly serves nearly 500 service providers worldwide. We estimate Tivo's subscriber base (not mutually exclusive) to include the original Rovi Corporation's base of approximately 18 million households, 8 million (original) TiVo subscribers, and 12 million Pay TV subscribers served by Cubiware's 40 customers across 25 countries in Latin America, Europe, the Middle East, and Asia..

Frost & Sullivan notes that customers are frustrated today with the fragmentation of content titles across online services and apps, compounded by inconsistent availability of various services and apps across various consumer devices. Surrounded by a confusion of sites and apps across Smart TVs, streaming media devices, tablets, smartphones, PCs and

gaming consoles, customers are unable and unwilling to fully explore all channels and services that might be available to them. Toggling TV inputs, juggling multiple remotes, and managing device clutter are all legitimate grievances for consumers. Customers often silo themselves into popular services (such as Netflix) on their one favorite device to manage this frustration. As a result, programmers suffer from loss of viewers, and Pay TV operators lose control and engagement. TiVo aims to restore sanity to customers and restore engagement opportunities to operators through its Unified Entertainment system, which combines Rovi's metadata strengths with cross-service search to provide a single portal for users to discover and browse TV episodes across all accessible content services. This feature, among others, is packed into TiVo's current-generation DVR. Search results can be added to a cloud-based watchlist - which can then be accessed from any other device. The box also includes Plex to support home media library streaming.

Competitive Differentiation

Rovi was already a market-leading vendor in the metadata and EPG licensing market. Rovi has boosted its product and solutions portfolio through strategic acquisitions, establishing a diverse and comprehensive set of technologies and solutions for the television industry. Certain acquisitions have been incremental, such as last year's acquisition of FanTV (previously Fanhattan). Rovi jettisoned the doomed hardware product line, but leveraged the software platform into the beginnings of a modern TV platform.

Rovi's big leap forward came through its acquisition of TiVo. The original TiVo had already acquired DigitalSmiths, itself a previous recipient of the Product Leadership Award in Content Discovery from Frost & Sullivan. The original TiVo also acquired Cubiware last year. Cubiware's assets complemented those of TiVo and DigitalSmiths, adding support for cloud-based and hybrid deployment of advanced search and recommendations and OTT applications. As a new generation middleware provider, Cubiware also brought user interface enhancements to the table.

TiVo today arguably offers the most comprehensive set of content engagement and discovery solutions in the market, including metadata, semantic search capabilities, personalized search and recommendation, and traditional EPG. The company also offers customer reporting and audience segmentation capabilities, coupled with usage analytics. Platform components can be deployed traditionally or in the cloud, and web search is enabled across most components. This creates the infrastructural support necessary for operators to deliver experiences that jive with today's online-first, on-demand consumer expectations.

By investing heavily in a reboot of TiVo's once groundbreaking DVR device, and by demonstrating that consumer device investments will continue in the combined company, Frost & Sullivan feels that TiVo has upped its game on all fronts. In addition to cross-service content discovery, compelling features in the TiVo Bolt include 4K support, advertisement skipping, accelerated playback (without high-pitched audio), and the ability to download recorded shows for offline playback. This year's Bolt+ boasts a massive 3TB

hard drive.

Last but not least, TiVo now packs more than 6,000 issued patents and pending applications in its intellectual property arsenal. From operators such as Dish to CE device vendors including Samsung, nearly every ecosystem player is a licensee of TiVo in some form. Despite the company's pivot to full-fledged solutions, this solid IP position remains an anchor for TiVo's competitive strength in the industry.

As a result, TiVo is well positioned to serve as a powerful partner to Pay TV providers as the television ecosystem continues to evolve.

Price/Performance Value and Brand Strategy

This is the category where Rovi Corporation has made the boldest pivots in its corporate strategy and long-term positioning. Macrovision, with the acquisition of Gemstar, rose to prominence on the strength of its formidable arsenal of intellectual property in the areas of electronic program guides and its best of breed offering for entertainment metadata in North America. As part of the rebranding to Rovi and the first stages of corporate evolution, the company had already begun to move towards more cordial licensing practices and a position more rooted in partnership.

With its current transformation, the company shed the last vestiges of its legacy brand and has fully embraced the consumer-centric, forward-facing energy of the TiVo brand. This comes in tandem with a pervasive culture shift within the company. The new TiVo conveys a commitment to business-enabling solutions, aimed at restoring revenue growth and consumer engagement for Pay TV operators. This is not to say that the company will move away from its positioning as a vendor of premium solutions, or move towards aggressively competing on price. There is the intention, however, to provide a much more compelling and durable price-performance value proposition, with value rooted in business-enabling, competitively differentiated features.

It is also worth noting that TiVo is moving decisively towards global expansion, thus extending its value proposition outside Rovi's traditional stronghold of North America. With growing depth of metadata solutions for European countries for example, the combined company has its sights firmly set on establishing appeal for a wider, more diverse customer base.

Blue Ocean Strategy

TiVo's position as a vendor who offers the trifecta of cross-service search & recommendation, metadata solutions, and unified consumption devices puts it in a blue-ocean space. The urgent and critical goal for Pay TV operators today is to regain their status as the primary destination for entertainment experience. TiVo is solidly positioned to help bring an operator back into subscriber focus. This strength is rooted as much in device innovation as in infrastructural components including EPG guide feedback and usage analytics.

Adding a further layer of competitive differentiation is the company's vision to leverage available data and insights to transform the entire media experience. This is a key differentiator for the new TiVo that positions the company favorably for successfully executing a blue ocean strategy. The future of media value generation and personalization of the consumer experience is enabled by the ability to use data, analytics and insights to understand consumer engagement. This is where TiVo sees a large opportunity / potential for differentiation. More importantly this is how the company sees a major opportunity to create positive impact through the media industry transformation and bring value to their customers and the ecosystem.

The company's rejuvenated DVR offers a compelling solution to solve the problem of device clutter on the consumer's mantelpiece, while also restoring single point of user interaction. That said, devices and set top boxes alone are inadequate foundations for long-term growth. Operators remain torn between apps and dedicated devices, and competition from other streaming devices such as Roku and other types of CE devices like tablets and consoles is quite high. This is where TiVo's patent portfolio and metadata licensing services come into play. By playing an enabling role in the broader ecosystem, including with competing devices, TiVo hedges its bets and generates robust revenue streams. By stepping away from a litigative reputation and pivoting to a solutions-based approach, TiVo seeks to position itself as an OTT experience and monetization partner for a broad ecosystem of players. Other companies either offer the metadata aspect or the CE device aspect, but not both, putting TiVo in a unique blue-ocean position.

Certainly there are challenges – for example, TiVo's strength in emerging markets is still limited. Nonetheless, the company occupies an impressive position, with market-leading data quality in current major OTT markets of North America and Western Europe. Its current entrepreneurial mindset and drive, together with a small but solid footprint in countries worldwide, positions it quite well for continued global expansion. As an illustrative point of reference, prior to the acquisition under an independent commercial agreement, TiVo selected Rovi's metadata to replace a competing vendor's metadata libraries in all of their products. As a representation of the entrepreneurial spirit shared by both companies they moved rapidly - yet systematically – employing advanced machine learning and its knowledge graph to complete a full transition across all consumer and operator products in an impressively expedient, 4-month period. Frost & Sullivan believes that this spirit and drive is truly characteristic of agile entrepreneurial ventures.

Conclusion

Changes in traditional broadcasting and Pay TV services are shifting value and monetization potential away from traditional offerings and licensing business models towards OTT-centric discovery and monetization solutions. Traditional leaders in conventional businesses such as metadata, middleware, set top boxes and service branding will inevitably face challenges in maintaining revenues and growing market share. In contrast, younger and more agile companies are moving to fill market gaps and empower Pay TV services to modernize and compete more effectively with new media services. While larger vendors can purchase market influence by acquiring these newer companies, long-term competitive strength relies in the ability of incumbent leaders to fundamentally reinvent themselves. Company strategy, culture, development and product portfolios all need to move decisively to serve changing market needs. This decisive shift to end-to-end solution offerings requires an entrepreneurial spirit.

The new TiVo, as the reinvented Rovi, has put a solid stake in the ground as the company moves to transform its strategy, leverage a modern brand, and redesign their product portfolio to be optimally positioned to thrive in today's and tomorrow's market conditions. Through internal recalibration, strategic acquisitions and aggressive engineering, the new TiVo has established a refreshing, compelling value proposition.

In recognition of this transformation, TiVo has earned the 2016 Frost & Sullivan Global 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.



Key Benchmarking Criteria

For the Global 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.

Entrepreneurial Innovation

- Criterion 1: Market Disruption
- Criterion 2: Competitive Differentiation
- Criterion 3: Market Gaps
- Criterion 4: Blue Ocean Strategy
- Criterion 5: Passionate Persistence

Customer Impact

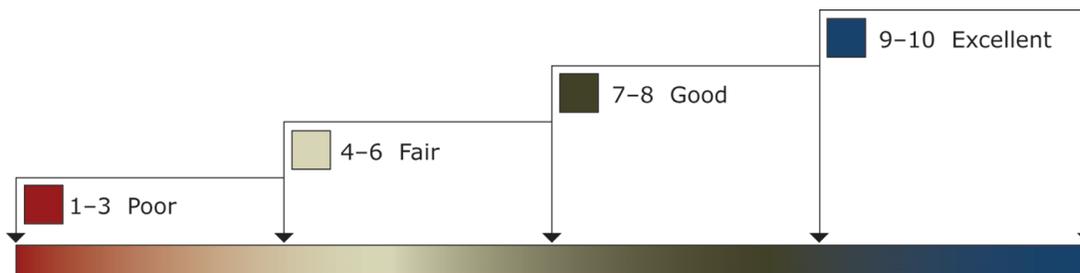
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practice Award Analysis for TiVo

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 Entrepreneurial Innovation 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> | | | |
|---|----------------------------|-----------------|-----------------------|
| Entrepreneurial Company of the Year | Entrepreneurial Innovation | Customer Impact | Average Rating |
| TiVo | 9 | 9 | 9.0 |
| Competitor 2 | 6 | 7 | 6.0 |
| Competitor 3 | 6 | 8 | 7.0 |

Entrepreneurial Innovation

Criterion 1: Market Disruption

Requirement: Innovative new solutions that have a 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 in 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 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

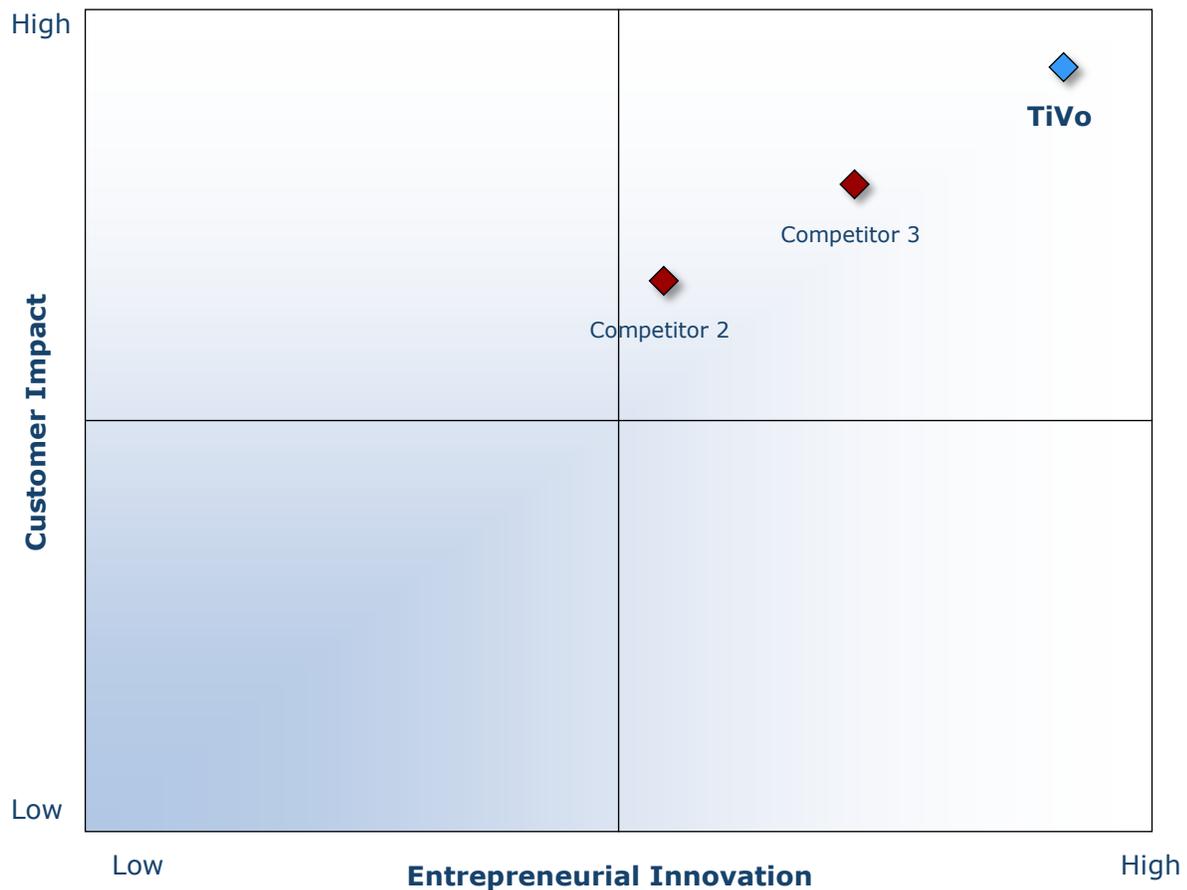
Criterion 5: Brand Equity

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 ENTREPRENEURIAL COMPANY OF THE YEAR 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 Monitor, target, and screen | Identify Award recipient candidates from around the globe | <ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies | Pipeline of candidates who potentially meet all best-practice 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-practice criteria • Rank all candidates | Matrix positioning 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-practice 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-practice 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-practice Award recipient | <ul style="list-style-type: none"> • Review analysis with panel • Build consensus • Select winner | Decision on which company performs best against all best-practice criteria |
| 9 Communicate recognition | Inform Award recipient of Award recognition | <ul style="list-style-type: none"> • Present 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 may 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 future strategic planning | 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>.