



2015 Global Industrial Physical Infrastructure Ethernet
Product Line Strategy Leadership Award



FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

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Background and Company Performance

Industry Challenges

Frost & Sullivan points out that the definitions by which the conservative industrial landscape was previously defined are now rapidly blurring. The technological advancements that began in the computing world - from the mainframe computer to the commercial Internet - have created a massive platform for innovation. Frost & Sullivan observes a high degree of penetration of the Internet or information and communications technology (ICT) into the manufacturing and industrial landscape, making data ubiquitous and thus leading to better actionable decisions via analytics.

The challenges that arise while preparing for this future are enormous. This begins with developing an appropriate infrastructure that is scalable. With a need to collect and transmit different types of information from different resources over enterprise communication infrastructures via multiple signaling devices and protocols, it is not viable for these systems to operate in silos using proprietary products and solutions.

The future of enterprise - shop floor networks - is the convergence of Internet protocol (IP), where signal transmission for networking, field devices, building management, and security systems are merged over one common infrastructure using common protocols, rather than deploying disparate protocols. Industrial end users report to Frost & Sullivan how they face many diverse challenges as they embark on this new journey in attempting to deploy IP. Cabling media and associated networking components require high performance and service while ensuring scalability, low risk, and seamless integration to deploy complete IP-based communication infrastructures that will become a prerequisite for any vendor within the signal transmission space.

In such a growing market, Frost & Sullivan firmly believes that the company that properly leverages product line strategy leadership to address these challenges will stay ahead of the competition and enjoy high industry recognition in the industrial Ethernet era.

Product Line Strength and Customer Impact of Belden, Inc.

Breadth

One of the key strengths of Belden is its extensive product portfolio. Belden offers a range of hardware solutions for industrial networking, industrial cable, industrial connectivity, machine control solutions (MCS), enterprise connectivity, and infrastructure applications.

Belden is known today as a company that brings in many leading brands and boasts of a comprehensive portfolio of connectivity and networking products for signal transmission. In less than 10 years, Belden has metamorphosed through a series of strategic acquisitions. Originally a supplier of copper cable products, Belden acquired Hirschmann Automation and Control, a leading supplier of industrial Ethernet switches and routers, in 2007. The acquisition of Lumberg followed very quickly in the same year. This is a smaller firm with expertise in compact Ethernet packaging and connectivity. In 2010,

Belden had another strategic acquisition of GarretCom - an industrial Ethernet switch supplier. As a part of its strategic vision in the industrial Ethernet era, in 2011 Belden acquired Tofino Security, a leader in industrial security appliances and technology and Brazilian industrial cable specialist, Poliron. On July 30, 2014, Belden announced yet another strategic acquisition of ProSoft Technology, a leading developer of industrial communication solutions for automation and control applications. ProSoft Technology has over 400 products supporting more than 60 different industrial automation languages.

By leveraging such an extensive range of solutions, Frost & Sullivan appreciates the fact that Belden has carved a distinct position for itself in the signal transmission solutions market. Frost & Sullivan expects that Belden's emphasis on continuous product versatility, in terms of technology and functionalities, will strengthen its position even further in the global market over the coming years.

Scalability

The industrial landscape is set to undergo a massive transformation with respect to the advancements in technology. This sector will be moving into the era of industrial Internet/Ethernet. Belden is clearly able to foresee this transformation and has built an incredible product line that is ready for the future.

Belden's industrial cable division is the company's starting point in their journey towards becoming a global signal transmission solution provider. Cabling forms a vital part of every network, and Belden grasps this dynamic quite well; its ability to offer high-performance, reliable transmission is crucial for carrying out regular factory operations. From critical data center connections that link network switches and servers, to links that deliver voice, data, and video for a wide range of networking, communications, security, and building management applications, Belden has the end-to-end copper cabling solution to cater to existing networking challenges and also provides the bandwidth and scalability for the needs of the future. Belden's solutions include industrial data solutions that support industrial Ethernet and bus networks, as well as EIA-485 applications, instrumentation and control cables, armored cables, flexible automation cables, Pan/Tilt/Zoom CCTV camera cables, fire alarm cables, sound (paging) cables, switches, and more.

Technology Leverage

The company has implemented Lean manufacturing over the past couple of years. While each production shift team has a brief daily meeting at the beginning of the day, the plant management team meets almost every afternoon at its Lean board to summarize and review all of the other boards. The plant has approximately 50 extruders filling 1.1 million square feet. Extruders consume much energy in the form of heating elements. Combining energy savings, Lean, and automation, Belden has tackled the problem of energy waste that results from leaving the heaters on over the weekend. A team looking into simple

automation had applied automatic timers, so that the extruders would start on Monday morning as soon as the operators were ready. This is exemplary and truly shows how cutting-edge technologies are used in their product line.

Belden has positioned itself strategically in this market due to its strong technical knowledge base. For example, if an end user has decided partner with Allen-Bradley-Rockwell Automation, then they have a whole list of Belden products that are complementary. Similarly, if the end user prefers to go with Siemens, then that solution is complementary with Belden as well. Belden has positioned itself in such a way that its product lines gel quite well with any other brand on the industrial factory floor. Belden's products are compatible with those of any other type of automation company, and such positioning has clearly emerged from its commendable in-house technical knowledge base.

Features

One of Belden's areas of focus is industrial IT, which is reported as a separate end market; this is little over 10% of their overall revenue. Here, they sell wire-to-wireless switches and routers, both hardware and software products. Ethernet is the preferred communication principle on the factory floor, and Belden is also making continuous investments in wireless products. Security is also becoming an important area of focus for Belden. End users are also beginning to realize that industrial facilities and industrial environments are subjected to the same degree of security threats that are seen in the commercial space.

Frost & Sullivan notes that Belden's reliable market strategy demonstrates complete knowledge of the applications that industrial end users require. From a product standpoint, there is much more variation in the product lines than one would observe in an enterprise application. Product management is substantially different; much customization is seen. Looking at competitors such as Cisco, Belden may have a slight disadvantage on the routing technology and the core infrastructure. But as a dominant industrial vendor for several decades, Belden beats such competition by understanding the industrial/manufacturing application better, being more responsive, more flexible, and having more product variants that cater to a variety of vertical segments.

Customer Service Experience

Belden is a global provider of multiple products when it comes to signal transmission, not just a mere supplier, but a true strategic business partner delivering solutions that make end-user facilities perform more efficiently and profitably. This strategic approach is observed by Frost & Sullivan across all of their product divisions.

Belden offers a variety of world-class networking services. The core components of Belden's network services are on-site technical consultation that includes network design and trouble shooting, switch staging, and switch commissioning. Switch staging is a

convenient option wherein Belden loads and saves a predetermined configuration into the switch prior to shipment, which makes the switch ready to use. Network services aim to support its customers in the design, management, and maintenance departments, as well as aid in training and developing a strong team of professionals to ensure its smooth operation.

Belden practices great care when it comes to handling customers' complaints and product returns. Belden follows a customer-friendly approach by charting a simple but effective procedure that facilitates simple transactions. Such efforts further improve the brand's equity.

Brand Equity

Belden was founded by Joseph C. Belden in 1902 in Chicago, IL; the company is headquartered in St. Louis and has manufacturing facilities in North and South America, Europe, and Asia. The company has been a leader in the design and manufacturing of insulated wire, cable, and related products for more than 100 years. Belden is currently among the leading companies in the global signal transmission market and is emerging as an ideal partner in the industrial Ethernet era. Although the company generates maximum revenue from the American markets, it enjoys a significant presence in the European and Asian markets. It has an extensive presence across a wide variety of industry verticals, such as oil and gas, power generation, mining, food and beverage, water and wastewater, automotive, transportation, machine building, electronic manufacturing, commercial buildings, data centers, and other discrete verticals, with automotive among its biggest application sectors.

Belden's research and development (R&D) processes minimize production and re-design costs to a great extent during product development stages and, at the same time, reduce the carbon footprint. Through fewer product re-designs, Belden is able to achieve carbon dioxide reductions. Belden has high-end, on-site test equipment that is instrumental in reducing the need for unnecessary transportation to external test facilities.

Ecological aspects such as energy consumption and product disposal are areas of focus for Belden. In order to achieve this benchmark, the latest innovations, such as newer materials and technologies to create more efficient products and save on energy consumption, are being employed at all Belden facilities. Belden's worldwide presence enables the company to be in close proximity to most of its customers and partners, thereby further enhancing the company's brand reputation.

Conclusion

The IP-based market is a growing segment in the industrial and manufacturing space. Frost & Sullivan agrees that the growth of this segment over the last couple of years reflects the future course of the overall market. Belden's product and technology line-up has a well-formulated design platform, supported by signature service offerings and the 100-year legacy back up of Belden's brand value. This combination of technical excellence and its continuous advancements give it a clear strategic edge over other products in this evolving market. With its strong overall performance, Belden Inc. has earned the 2015 Frost & Sullivan Global Product Line Strategy Leadership 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

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 Global 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

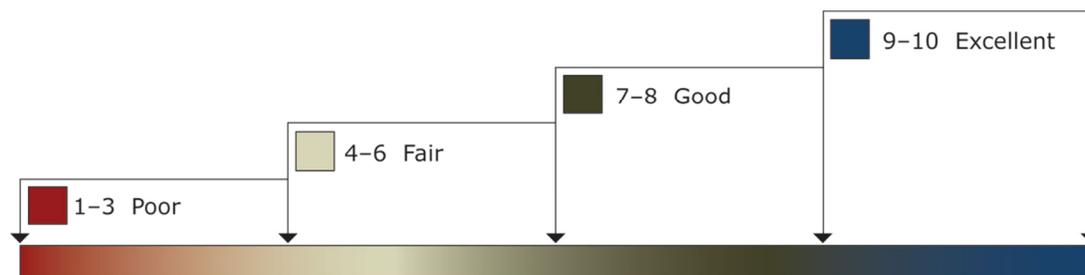
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practice Award Analysis for Belden, Inc.

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 in as Company 2 and Company 3.

DECISION SUPPORT SCORECARD FOR PRODUCT LINE STRATEGY LEADERSHIP AWARD

| <i>Measurement of 1-10 (1 = poor; 10 = excellent)</i> | | | |
|---|-----------------------|-----------------|-----------------------|
| Product Line Strategy | Product Line Strength | Customer Impact | Average Rating |
| Belden, Inc. | 9 | 8 | 8.5 |
| Competitor 2 | 7 | 6 | 6.5 |
| Competitor 3 | 6 | 6 | 6.0 |

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

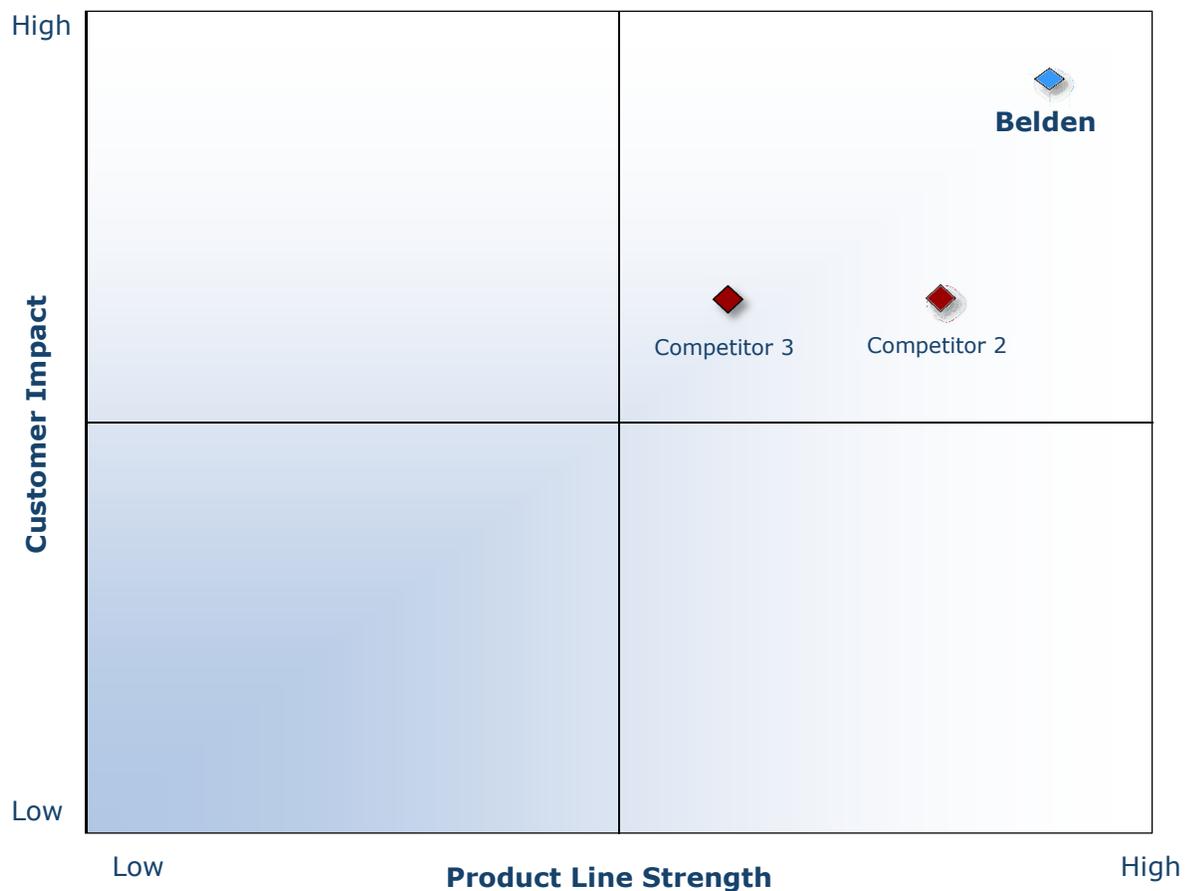
Criterion 5: Brand Equity

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.



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>.