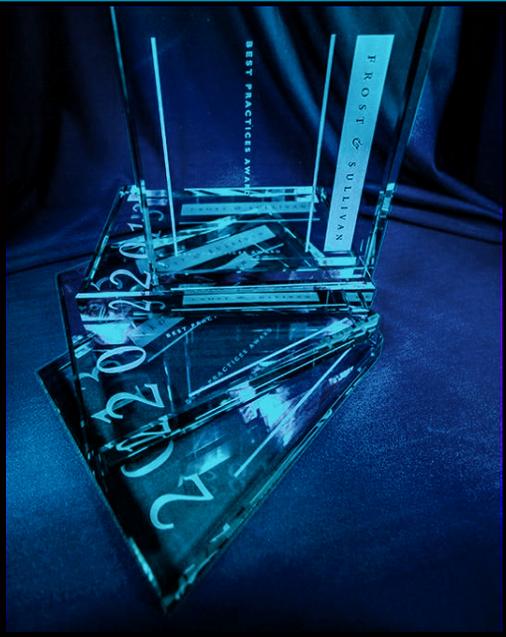




2016 North American  
Post-Silicon Validation Solutions  
Customer Value Leadership Award



FROST & SULLIVAN

BEST  
2016 PRACTICES  
AWARD

NORTH AMERICAN  
POST-SILICON VALIDATION SOLUTIONS  
CUSTOMER VALUE LEADERSHIP AWARD

2016  
BEST PRACTICES  
AWARDS

## Contents

<i>Background and Company Performance</i> .....	2
<i>Industry Challenges</i> .....	2
<i>Customer Impact and Business Impact</i> .....	2
<i>Conclusion</i> .....	5
<i>Significance of Customer Value Leadership</i> .....	6
<i>Understanding Customer Value Leadership</i> .....	6
<i>Key Benchmarking Criteria</i> .....	7
<i>Customer Impact</i> .....	7
<i>Business Impact</i> .....	7
<i>Decision Support Matrix</i> .....	8
<i>The Intersection between 360-Degree Research and Best Practices Awards</i> .....	9
<i>Research Methodology</i> .....	9
<i>Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices</i> .....	10
<i>About Frost &amp; Sullivan</i> .....	11

## Background and Company Performance

### *Industry Challenges*

Increasing complexities in chip design with shortened time to market make broad test coverage a challenging task. This is where post-silicon validation becomes very important, by validating manufactured chips in actual application environments and ensuring that they are bug-free. Post-silicon validation involves a variety of tests that are dependent upon a chip's functional complexities.

In the semiconductor industry, plenty of standardized tools and processes are available for design and production testing; however, the post-silicon validation process is often designed by validation and integration engineers in individual semiconductor laboratories and often lacks standardization and coordination, even among different laboratories of the same company. This results in non-efficient use of resources, loss of knowledge when an engineer leaves the company, and, more importantly, longer timelines to design and execute validation processes for each chip design.

With rapid evolution of technology and ever-shortening product development life cycles, achieving quick time to market is of utmost importance. To be a leader in the post-silicon validation solutions market, the solution provider should encourage standardization of this currently fragmented process and show value with a robust, efficient validation process.

### *Customer Impact and Business Impact*

#### **Customer Ownership Experience**

Founded in 1998 and headquartered in Bengaluru, India, Soliton Technologies offers test and measurement automation research, development, and consulting services. While Soliton serves a wide range of industries, the majority of its business is from the semiconductor market, for which it provides test and validation solutions from the laboratory to the fabrication plant. Soliton is a pioneer in enabling large-scale standardization of post-silicon validation automation in large semiconductor companies and has the most dedicated solution focus than any other market participant.

Soliton uses National Instruments' LabVIEW and TestStand software for its test and validation solutions, which provides the option for portability from the design validation environment to the production test environment. Standardization helps clients achieve faster test and validation times and faster time to market. For example, one of its major semiconductor clients had many teams each spending 2-4 weeks validating compliance of their chips to industry standards for popular digital protocols. Soliton, when contracted for one such requirement, helped build a reusable and device and test instrumentation agnostic framework that brought this validation time down to less than 2 hours for customizing the framework to a new DUT, and about 2 hours for running the tests and verifying compliance.

Over the course of multiple such engagements spanning multiple years, working closely with a visionary manager in a client's organization, Soliton helped create a standardized

design validation platform that is used by the client's engineers across their laboratories globally. This helped in eliminating or greatly reducing redundant efforts that different teams used to undertake before this standardization. In addition, the platform is maintained and supported by a central support team staffed by Soliton engineers, thereby removing each team's burden of maintaining support for their own unique set of automation tools.

Soliton provides semiconductor production test solutions based on the National Instruments Semiconductor Test System (NI STS) platform, which is also based on LabVIEW and TestStand. The emergence of the NI STS is a great opportunity for the industry to converge and reap the efficiency benefits of a single platform for validation and test. Soliton, tapping into its long track record of leveraging National Instruments technology, is working with National Instruments and semiconductor companies to put the tools and processes in place to drive standardization between the lab and the fab.

In addition to automation solutions for post-silicon validation and production test, Soliton also provides standardized platforms and solutions for IC Customer Evaluation Kits/Modules (GUIs and firmware) and for enterprise wide laboratory equipment utilization monitoring.

Soliton's revenue has been growing at an average of 30% CAGR from 1998 to 2015. Also Soliton has high customer retention, with 90% of its annual revenue comes from clients added in the previous years).

### **Customer Purchase Experience**

Working with engineers and scientists in a cutting-edge industry can be demanding. Soliton's technically adept sales team ensures an optimal purchase experience through its expertise about software architectures, semiconductor testing, and automation. Soliton has sales presence in major semiconductor centers in the United States with reach into Europe, Southeast Asia, and India to make the right people available to understand clients' needs and help them make the right choice.

### **Customer Service Experience**

Soliton recruits self-motivated and customer-centric staff, and places technical architects in the sales team to ensure that client requirements are delivered downstream. As an ISO certified company, development and delivery aspects are process-driven to minimize errors and deviations. The company also provides operation manuals, conducts training, and offers a strong technical support team.

Soliton utilizes a 5-point scale feedback system to determine customer satisfaction, where 1 is 'extremely unsatisfied' and 5 is 'extremely satisfied.' The team strives to achieve a rating of 4 or above on each project. If a project rating drops below 4, the company investigates to determine why and rectify it to ensure satisfaction. In 2015, Soliton Technologies received the Supplier Excellence Award from Texas Instruments, one of its major clients.

## Financial Performance

With strong vision and guidance from top management, Soliton Technologies adapts its strategy to changing market conditions. Despite strategically exiting from the system integration business where it was not sufficiently differentiated, which contributed to 60% of its revenue in 2004, Soliton has been able to achieve about 30% CAGR from 1998 to 2015. Soliton now focuses on the software development and consulting business around a few core areas where it has unique strengths. The proliferation of connected devices and the resulting demand for chip-level tests has helped Soliton reap financial benefits from its decision to focus on the semiconductor market, building a strong customer base with market leaders such as Texas Instruments, Cirrus Logic, Freescale Semiconductors (NXP) and Analog Devices. About 80% of Soliton's revenue is from the semiconductor market.

## Growth Potential

Soliton's focus on the high-growth semiconductor market, especially as it works towards productizing its post-silicon validation solution platform, will open doors for additional business with existing clients and with new semiconductor clients, and in new regions such as Europe. The NI STS-based semiconductor production test solution will help Soliton capture revenue across the semiconductor product development life cycle. Its production test expertise can help the company expand in Southeast Asian markets that have many manufacturing facilities.

Soliton's expertise in adjacent fields such as embedded systems, web technologies for cross platform and web application development, machine learning and data analytics draws incremental business from its strong client base. A wider industry focus covering semiconductor, automotive, biomedical, and aerospace and defense positions Soliton to continue its high growth rates.

## Human Capital

Soliton's strong workforce of over 150 people is spread across India and the United States. More than 85% are technical resources, including more than 100 LabVIEW-trained engineers, of whom 12 are certified LabVIEW architects. The company has the largest semiconductor-focused LabVIEW team among National Instruments partners, and received National Instruments' Outstanding Technical Resources Award in 2015. Soliton's stringent hiring process has an acceptance rate of less than 1% to ensure that only talented and self-driven individuals with high integrity and customer empathy are on staff.

Soliton emphasizes training: Its engineers start with 6 weeks of classroom training followed by 6 months of field training. To keep up with the growing demand for its solutions, Soliton is planning to increase its workforce by around 30% in 2016. Soliton's management ensures that the company's values, culture and vision are instilled through timely appreciation and feedback from their managers and training events; and monthly company meetings and the annual Soliton Day, during which employees are recognized for achievements.

## *Conclusion*

As a pioneer in enabling standardization of the fragmented post-silicon validation process, Soliton Technologies brings immense value to its clients by saving them time and money. Its platform approach is a lifeline to the semiconductor industry at a time when the technology life cycle is shrinking and being first to market is critical to succeed. Soliton enables customers to focus on core competencies of innovating semiconductor technology rather than building test and validation systems. With over 10 years of semiconductor test and validation expertise, its motivated and tech-savvy workforce and visionary management has positioned the company to dominate the semiconductor validation software space. The company is well on its way towards its vision of becoming a globally recognized technology brand known for integrity, innovation, and excellence.

With its strong overall performance, Soliton Technologies has earned Frost & Sullivan's 2016 Customer Value Leadership Award.

## Significance of Customer Value Leadership

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again. Delighting customers is therefore the cornerstone of any successful growth strategy. To achieve these dual goals (growth and customer delight), an organization must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



## Understanding Customer Value Leadership

Customer Value Leadership is defined and measured by two macro-level categories: customer impact and business impact. These two sides work together to make customers feel valued, and confident in their products' quality and long shelf life. This dual satisfaction translates into repeat purchases and a high lifetime customer value.

## *Key Benchmarking Criteria*

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

### *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

### *Business Impact*

#### **Criterion 1: Financial Performance**

Requirement: Strong overall financial performance in terms of revenues, revenue growth, operating margin and other key financial metrics

#### **Criterion 2: Customer Acquisition**

Requirement: Customer facing processes support the efficient and consistent acquisition of new customers, even as it enhances retention of current customers

#### **Criterion 3: Operational Efficiency**

Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high quality standard

#### **Criterion 4: Growth Potential**

Requirements: Customer focus strengthens brand, reinforces customer loyalty and enhances growth potential

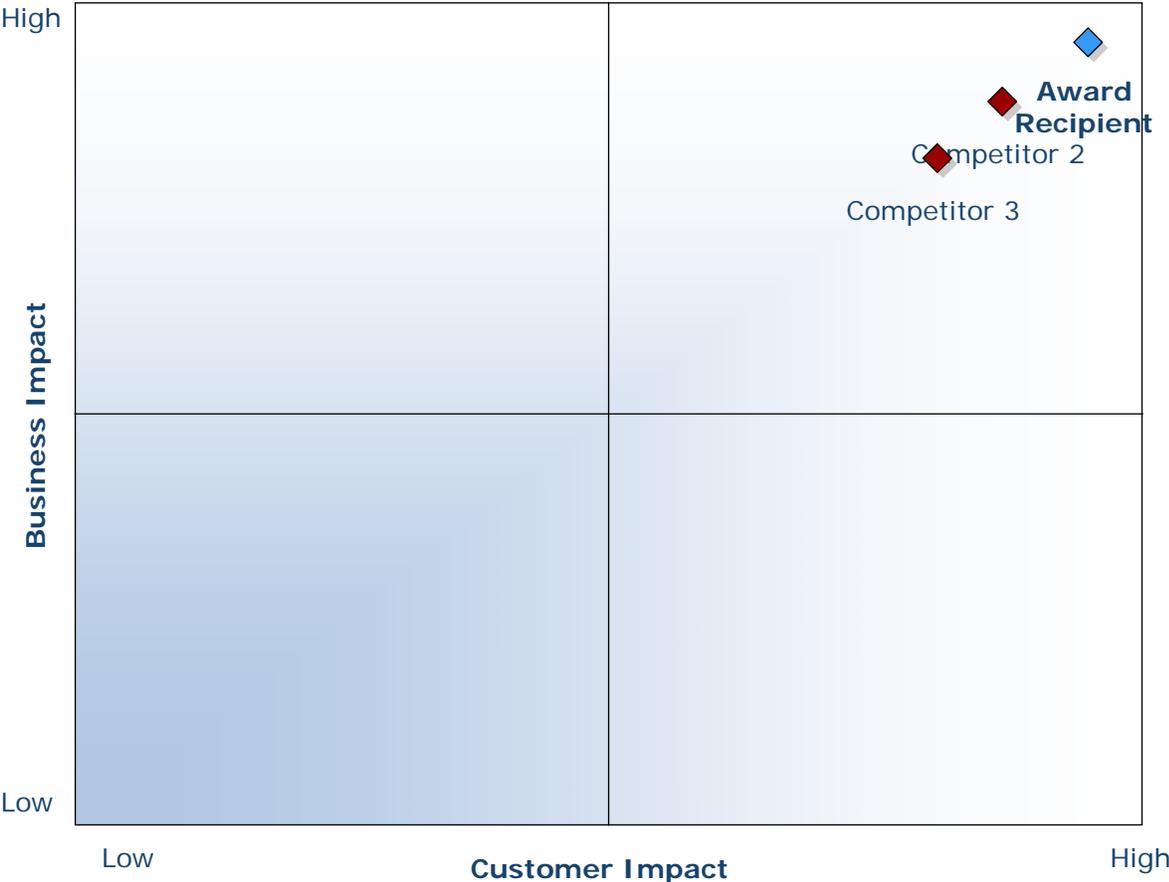
#### **Criterion 5: Human Capital**

Requirement: Company culture is characterized by a strong commitment to quality and customers, which in turn enhances employee morale and retention

*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 CUSTOMER VALUE 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>	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>.