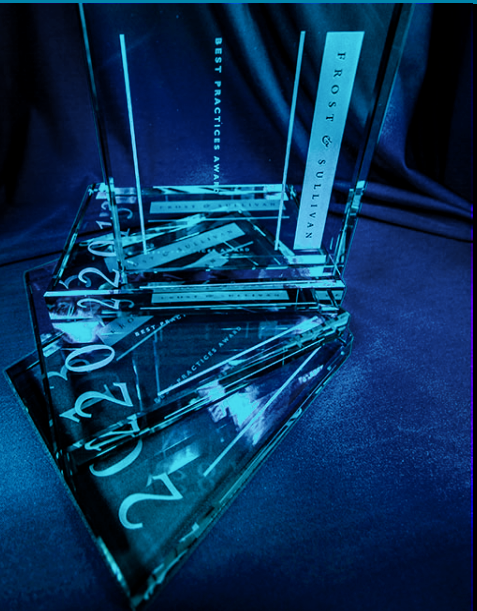


FROST & SULLIVAN

ITERIS[®]

2016 North American Agronomic Predictive Analytics Technology Innovation Award



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NORTH AMERICAN AGRONOMIC PREDICTIVE
ANALYTICS TECHNOLOGY INNOVATION AWARD

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Background and Company Performance

Industry Challenges

Frost & Sullivan's ongoing analysis confirms that the North American agricultural industry is poised with several key challenges that can be addressed effectively by combining technologies and services for proactive development of products that will increase precision and optimization of the agronomic products.

End users are demanding accessibility to data, services, and applications anytime and anywhere, and this has led to several challenges in the North American agricultural industry. According to Frost & Sullivan's research conducted in 2015, predictive analytics is identified as one of the key contributors enabling the growth of precision farming. Predictive analytics in precision agriculture is needed for the optimization of application of fertilizers, herbicides, pesticides, and seeds; as well as to increase the sustainability of agriculture across the globe.

Predictive analytics aids in the identification of crop zones that require chemicals without damaging the health of crops. It improves the efficiency of agricultural equipment. Moreover, it provides detailed and accurate information on the state of farms and the crops. Also, the emergence of data management and analytical solutions has established the trend of data-based decision-making techniques in various agronomic industries. Predictive analytics in precision agriculture enables the collection and analysis of data from various applications across the farm that can be used to make better and smarter farm management decisions.

The analytics solutions for the North American agricultural industry have been limited to applications and application program interfaces (APIs). Many of the existing agronomic predictive analytics solutions do not support an open and extendible architecture design. Furthermore, the lack of machine learning capabilities in most of the agronomic tools currently available restricts true precision.

Technology Attributes and Future Business Value

Industry Impact

Addressing the above challenges, Iteris, Inc. (Iteris), a US-based company, has developed ClearAg® (ClearAg), an adaptive, machine learning based platform. It is an open agronomic platform that provides precision support services. The solution provides weather, water, soil, and crop growth information, combined with agronomic data modelling capability. ClearAg also offers agronomic modelling advisory services for planting, irrigation, crop health, pest & disease, nutrient throughput, and harvesting technologies.

Iteris is one of the forerunners in the North American industry to have developed a robust agronomic predictive analytics solution. Since the inception, of the ClearAg initiative, Iteris has been focusing on creating an open, global, and adaptive agronomic platform. With most of the competing predictive analytics companies providing only applications, Iteris has taken a step further in developing ClearAg, providing an open and extensible platform. For example, the ClearAg Platform has the capability to integrate sensor networks through ClearAg's Internet of Things (IoT) interface. The ClearAg Platform can also be used to run proprietary agronomic models, developed by third parties, such as crop pest models, nutrient models, or disease models. Using the ClearAg Platform, the end user can develop highly specific and proprietary information that can be used for business purposes. With ClearAg being a machine learning based platform, everything is adaptive. ClearAg's focus on developing a globally scalable platform, advancements in powerful big data techniques, and precise data modelling achieved through this platform can be expected to bolster its adoption in the coming years. The system will adapt to advancements over time and; thus, create a significant impact in the global agricultural industry.

Iteris is among the very few publicly-traded companies in the North American agronomic predictive analytics domain. Unlike most of the companies that participate in the agronomic predictive analytics domain, Iteris is not a venture capital-funded company. The company is financially strong, and has developed the ClearAg Platform and support infrastructure over the last two years (2014-2015) using cash the company has earned in other business operations.

Another important aspect of ClearAg's uniqueness among the leading programmatic agronomic processing platforms is that the platform is available globally. The global acceptance of such a solution is critical because stringent laws in some countries do not encourage sharing of information across country borders. Due to the solid financial status and the global acceptance of the ClearAg Platform, Iteris has been able to set up data centers in North America and Europe, with planned sites in Asia and South America, which are required for ensuring the protection of personally identifiable information, globally. The strong financial and technical competency exhibited by Iteris represents the company's adherence to industry best practices and its ability to strongly influence end users to adopt its ClearAg Platform.

Product Impact

Global agribusiness can be divided into a number of industry segments. These industry segments, include seed and crop protection, crop nutrition, allied providers, the ag risk industry, agronomists, co-ops, and growers; all of whom play an important role in the agricultural industry. Iteris has developed the patented and novel ClearAg solution, such that the product is uniquely positioned to serve diverse agricultural market needs.

What makes the ClearAg Platform unique is its design. ClearAg has been designed by Iteris in such a way that it can function as an open platform, wherein the end users can

utilize the ClearAg system for different applications. The company has been successful in implementing this functionality with its customers, not only globally, but also across cross-industry situations. Iteris provides the ClearAg systems to different classes in the industry segments, such as farmers, agricultural associations, research associations, co-ops, and agronomists, among others.

Iteris also offers an array of applications using the ClearAg Platform-enabled system, allowing the farmer or their trusted advisors or suppliers to gain operational efficiency in the field. The ClearAg system can also have a significant impact on the large enterprise accounts. The company has a number of global crop protection customers that incorporate ClearAg products and services. Valent U.S.A. Corporation, a wholly owned subsidiary of Sumitomo Chemical Company, Limited, is currently using Iteris' ClearAg technology in conjunction with its chemical, research, and product efficacy data. The combination of adaptive modelling with crop protection information facilitates optimized spraying and enables chemical applications, such as pesticides, while aiding in high-precision operational activities.

Additionally, ClearAg improves the sustainability of crops by continuously monitoring the crops' health and nutrition content. The product reduces the operational expenditure of the underlying growers because now they do not have to spend as much on herbicides, pesticides, supplemental nutrients, or other chemicals. It can also increase the yield of the farming operation. ClearAg products benefit all types of users in terms of better use of data science and effective information applied to agronomic applications. ClearAg has had a profound impact on the industry and has democratized the use of agronomic information by offering an open and extensible patented platform that competitors are unable to replicate.

Scalability

With expertise in software development, it was imperative for Iteris to build a modern and highly scalable agronomic platform that would address the needs of not only the corporate entities, but also farmers around the world. The ClearAg-based solutions, based upon scalable, Cassandra data services with content and services exposed across well-formed APIs, offer uncompromised performance and efficiency. This enables users to achieve economies of scale throughout their national or global operations. The system provides historical weather and soil information dating back to 1980, real-time and high-precision information, and predictive content, allowing ClearAg users to make real-time decisions in historical context.

Investing tens of millions of dollars into the ClearAg Platform, Iteris has developed a platform that is recognized as the newest, most technically advanced, and highly scalable agronomic platform with global acceptance. Featuring well-defined restful APIs and supporting both native and web-based applications, ClearAg facilitates multiple agribusiness services. This differentiates it from the competing solutions in the market.

Application Diversity

Application diversity resulting from ClearAg's open and extensible agronomic solution is a key characteristic differentiating ClearAg from competing solutions. Iteris supplies information in different modes, namely the access of information across the restful APIs, such as JSON (JavaScript Object Notation). These APIs are easily acceptable from third-party programs. The system also provides a programmatic component library that allows a higher level of programmatic integration.

Iteris' ClearAg Platform can also be integrated successfully with end-users' web portal or web applications with very little programming efforts. Iteris has recently developed a grower analytics application, named ClearAg Mobile, that was launched in March 2016. ClearAg Mobile provides full cropping season grower analytics in an easy-to-use, easy-to-understand format, and for integration into operational workflow. The system also provides international language support, enhancing the scope of the product's global acceptance. The ClearAg Platform has been built with offline processing capability for applications in remote areas or countries where wireless services are inadequate.

With technological advancements playing a critical role in addressing the problems faced by growers globally, Iteris offers APIs, components, and applications that have the capability to generate alert messages and reports. The ability to process human-to-machine, machine-to-human, and machine-to-machine messaging for events and machine-controlled applications is a unique feature of ClearAg that competitors are also unable to replicate.

Another impressive application of ClearAg is report generation. ClearAg compliance applications, which document the application of agricultural products, such as insecticides, herbicides, and crop nutrients, as well as document the environmental conditions under which a treatment is applied, are also offered by Iteris' ClearAg Platform. Using the ClearAg Platform, the end user is able to document the specific weather conditions, soil conditions, and crop growth stages that may be used to obtain compliance certifications.

Technology Licensing

Iteris believes in a multi-segment and multi-product approach. Iteris has been successful in packaging and licensing its ClearAg Platform in a number of ways. Iteris offers ClearAg to provide services to small startups looking for weather information. It also provides services to the farmers directly. Moreover, ClearAg services are used by large global crop protection companies, especially by their research and sales teams. The ClearAg Platform is applicable to not only the chemical side of crop protection, but ClearAg's high-precision, global, soil information also benefits ag biome applications and solutions. The adoption of the technology in the biological space is a good example of successful technology licensing, where biological activities such as bacteria and fungi occurring in the soil layer can be better understood in context with agronomic content.

Research interests from various companies across the globe for the development of biological solutions have increased over the years. Iteris has been successful in marketing the ClearAg Platform to small-scale biological companies, startups, and venture capital-funded companies. These companies benefit from enhanced efficacy of their products using Iteris' ClearAg Platform across wide geographical domains. For instance, agricultural companies may have crop research plots across a wide-geographical area and ClearAg information can aid the companies in monitoring the environment, soil conditions, and crop growth stages across different countries and locations.

Iteris' licensing model is based on a per-user basis for ClearAg Mobile and on a geographic basis for ClearAg Platform APIs and Components. Iteris also enjoys a unique position in the North American agricultural industry by providing services that can be branded for its individual partners. For example, if a retail channel needs to create brand awareness among the farmers, Iteris allows them to align its brand on Iteris' applications and distribute them to the brand's customers.

The openness permeates through Iteris' technology licensing mechanism and highlights the company's adherence to industry best practices. The technology licensing model helps Iteris in creating direct and indirect relationships, original equipment manufacturer (OEM) partnerships, and white label relationships with various agro-based companies across the globe.

Human Capital

Human capital and intellectual property are considered to be the greatest assets of Iteris. Owing to the company's steady financial condition, Iteris has been successful in attracting and hiring some of the best scientists in the world. Currently, there are 100 employees working in the ClearAg division, out of which 80 employees are computer scientists, data scientists, agronomists, computational meteorologists, crop growth modelling specialists, plant epidemiologists, and water physicists. Iteris has a very strong multi-disciplinary science team, which is unique in the industry.

As the company includes intellectually strong people, Iteris has implemented a set of rules within the organization that encourage innovation. One such rule is a patent program that mandates the employees to patent the developed technology before publishing it. As a result, all the technologies in ClearAg are patented. Currently, the company has over 20 issued patents and has approximately 60 patent applications filed. Iteris' human capital has encouraged the company to own a technology that cannot be easily replicated by anyone in the global industry; thereby, making ClearAg a unique and disruptive innovation.

Conclusion

Ensuring adaptiveness, ease of integration, and high scalability of agronomic platforms are key to the development of predictive analytics solutions in the North American agriculture industry. Frost & Sullivan's independent analysis clearly shows that the ClearAg Platform and the capabilities it provides, well positions Iteris to revolutionize the predictive analytics domain of the North American Agricultural industry. The company's focus on leveraging the simplicity of an open and extensible platform to deliver advanced machine learning tools has created a stir in the North American agriculture industry. The advanced capabilities of the solution in enabling various applications are likely to facilitate the adoption of ClearAg systems on a global scale in the coming years.

Because of its strong overall performance, Iteris, Inc. has earned Frost & Sullivan's 2016 Technology Innovation Award.

Significance of Technology Innovation

Ultimately, growth in any organization depends upon finding new ways to excite the market, and upon maintaining a long-term commitment to innovation. At its core, technology innovation or any other type of innovation can only be sustained with leadership in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding Technology Innovation

Technology innovation begins with a spark of creativity that is systematically pursued, developed, and commercialized. That spark can result from a successful partnership, a productive in-house innovation group, or the mind of a singular individual. Regardless of the source, the success of any new technology is ultimately determined by its innovativeness and its impact on the business as a whole.

Key Benchmarking Criteria

For the Technology Innovation Award, Frost & Sullivan analysts independently evaluated two key factors—Technology Attributes and Future Business Value—according to the criteria identified below.

Technology Attributes

- Criterion 1: Industry Impact
- Criterion 2: Product Impact
- Criterion 3: Scalability
- Criterion 4: Visionary Innovation
- Criterion 5: Application Diversity

Future Business Value

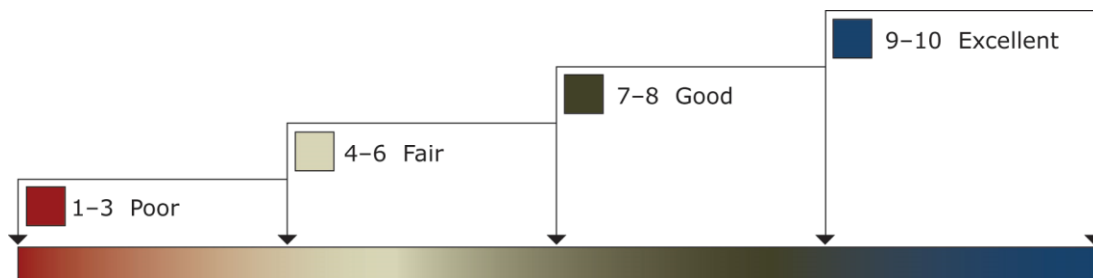
- Criterion 1: Financial Performance
- Criterion 2: Customer Acquisition
- Criterion 3: Technology Licensing
- Criterion 4: Brand Loyalty
- Criterion 5: Human Capital

Best Practice Award Analysis for Iteris 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 Technology Attributes and Future Business Value (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, Frost & Sullivan has chosen to refer to the other key players as Competitor 2 and Competitor 3.

DECISION SUPPORT SCORECARD: TECHNOLOGY INNOVATION AWARD

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
Technology Innovation	Technology Attributes	Future Business Value	Average Rating
Iteris Inc.	9.5	9.5	9.50
Competitor 2	8.5	8.0	8.25
Competitor 3	8.0	7.5	7.75

Technology Attributes

Criterion 1: Industry Impact

Requirement: Technology enables the pursuit of groundbreaking new ideas, contributing to the betterment of the entire industry

Criterion 2: Product Impact

Requirement: Specific technology helps enhance features and functionality of the entire product line for the company

Criterion 3: Scalability

Requirement: Technology is scalable, enabling new generations of products over time, with increasing levels of quality and functionality

Criterion 4: Visionary Innovation

Requirement: Specific new technology represents true innovation based on a deep understanding of future needs and applications

Criterion 5: Application Diversity

Requirement: New technology serves multiple products, multiple applications, and multiple user environments

Future Business Value

Criterion 1: Financial Performance

Requirement: High potential for strong financial performance in terms of revenues, operating margins and other relevant financial metrics

Criterion 2: Customer Acquisition

Requirement: Specific technology enables acquisition of new customers, even as it enhances value to current customers

Criterion 3: Technology Licensing

Requirement: New technology displays great potential to be licensed across many sectors and applications, thereby driving incremental revenue streams

Criterion 4: Brand Loyalty

Requirement: New technology enhances the company’s brand, creating and/or nurturing brand loyalty

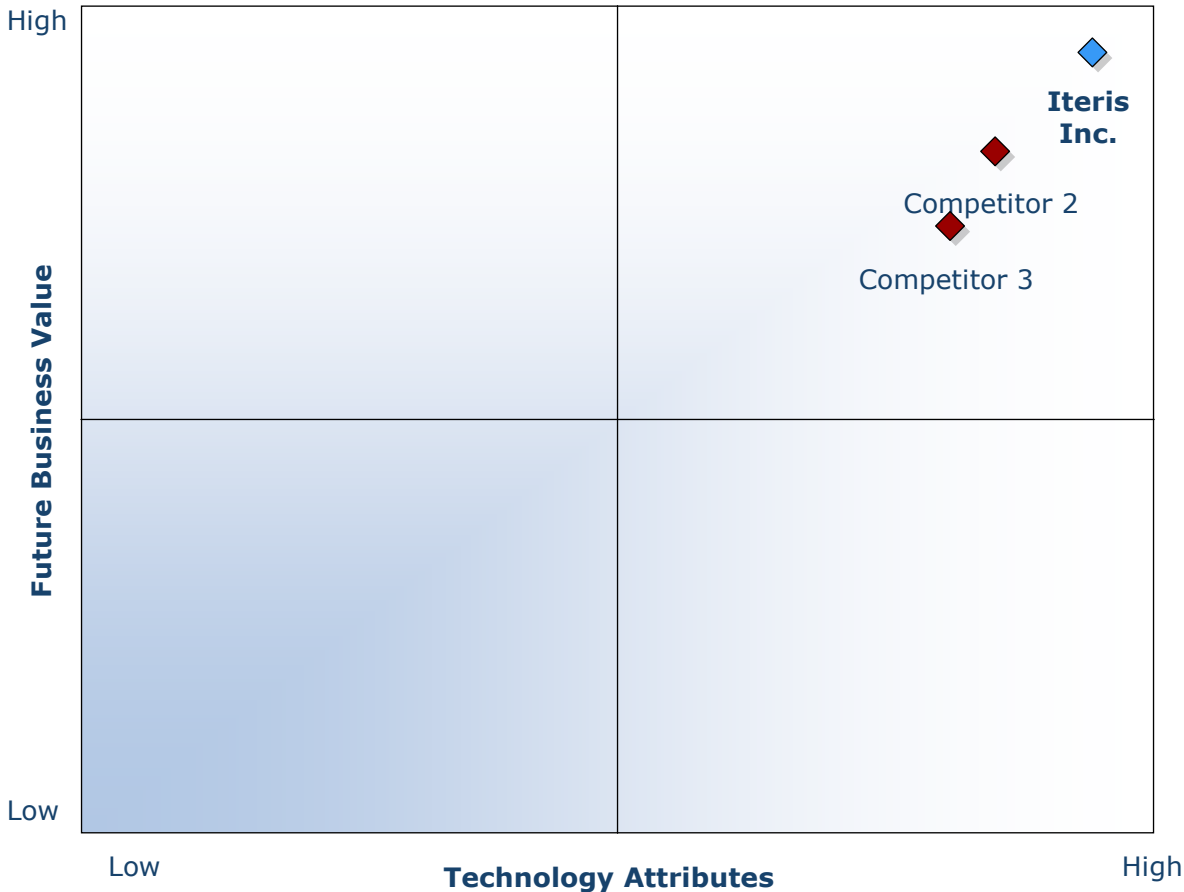
Criterion 5: Human Capital

Requirement: Customer impact is enhanced through the leverage of specific technology, translating into positive impact on 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: TECHNOLOGY INNOVATION 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



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 over 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 40 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.