

ARTIFICIAL SOLUTIONS

2014 European
Natural Language Interaction Platform
Enabling Technology Leadership Award



FROST &
SULLIVAN



50th, Innovation & Leadership

50 Years of Growth

Background and Company Performance

Industry Challenges

The emergence of Semantic Web technology has enabled organizations to access massive amounts of data with greater efficiency. Frost & Sullivan recognizes that retrieving this information from data sets requires using formal languages such as Structured Query Language (SQL), PHP: Hypertext Preprocessor (PHP), and Extensible Markup Language (XML), thereby restricting users who are unfamiliar with these complex machine-level languages from using the information to their advantage.

In order to address this issue, Natural Language Interaction (NLI), which uses meaning-text theory (MTT), was developed to bridge the gap between human language and computing devices. However, developing an accurate NLI system is very complex and time-consuming due to several design and implementation challenges. Some of the challenges of traditional NLI systems are mentioned below.

Traditional NLI systems are often based only on simple automated speech-recognition capabilities that enable users to convert speech into text without adding any intelligence; it has been observed that these systems lack in-depth understanding of the search query and fail to deliver optimal search results.

In addition, available solutions in the NLI market only allow online usage through computers. With the proliferation of a wide range of computing devices and advanced consumer electronics, the need for NLI systems will be felt not only while using traditional computers but also while using domestic electronic gadgets, such as video games, televisions, smartphones, and satellite navigation systems, among others.

Furthermore, building NLI systems can be a highly complex and time-consuming task that traditionally require advanced computational linguistics and programming capabilities.

Traditional NLI systems fail to address the aforementioned challenges due to their lack of “intelligence”, lack of a structured NLI development environment and their consequent inability to deliver truly enhanced interaction capabilities.

To address these problems with existing NLI systems, Sweden-based NLI technology developer Artificial Solutions has developed the Teneo Platform, which delivers end-users a superior next-generation user experience when interacting with connected devices and provides an intuitive natural language development platform that enables non-technical, non-linguists to rapidly build complex NLI solutions.

Customer Value and Technology Excellence

Commitment to Creativity

The primary focus while developing the Teneo Platform was to deliver humanlike, two-way interaction capabilities for users when they communicate with connected devices. Frost & Sullivan's competitive analysis reveals that, unlike competing NLI solutions that only offer automated speech-recognition (ASR) capabilities to accept inputs for voice-based searching, the Teneo Platform integrates three technologies: ASR to provide input to the devices, the Teneo Interaction Engine for natural language understanding and reasoning, and text-to-speech (TTS) technology to deliver spoken outputs to users.

The Teneo Interaction Engine is a proprietary analytical engine developed by Artificial Solutions based on a robust library for linguistic understanding that helps the platform analyze users' inputs and eliminate ambiguities when producing search results. Recognizing the need for NLI solutions with intelligent engines, Artificial Solutions incorporated an advanced linguistic interpretation capability and context data (such as previous interaction experience, location, and time data) into the Teneo Interaction Engine. This helps the engine understand and analyze the meaning of every word and sentence provided by users and to then perform the most appropriate reaction to the inputs.

Commitment to Innovation

In addition to the unique Teneo Interaction Engine, the company has also implemented two more vital components in its platform: Teneo Insight and Teneo Studio.

Natural human communication and interactions reveal a significant amount of information about an individual's attitude toward an issue or product. Frost & Sullivan notes that unlike traditional solutions, which do not capture the huge amount of data generated during the interaction or communication, the Teneo platform includes a dedicated tool called Teneo Insight, which has the ability to discover customer needs by understanding their interaction with the solution. The powerful text-mining ability of the Teneo Insight tool allows organizations to capture a massive amount of unstructured, conversational natural language data from customers interacting with the Teneo platform. In addition, the tool also has the ability to compare previous data with new inputs. This helps organizations understand and learn from customer trends and behaviors.

To eliminate the complexity of traditional NLI platforms for business users unfamiliar with machine-level languages, Artificial Solutions developed the Teneo Studio tool. This tool provides a simple object-oriented programming platform for users deploying the Teneo Platform to develop various applications according to their needs. Unlike competing solutions that provide complex code-based formats for developing applications, Artificial Solutions provides an intuitive, user-friendly platform with a visual flow chart structure and many automated features such as auto-linguistic rule generation, collaborative NLI development, integrated testing and innovative, patented language resource libraries in 21 languages, all enabling the rapid development of new NLI applications by clients.

Service Experience

To ensure high standards and a continued focus on providing superior customer experience, Artificial Solutions regularly connects with its huge customer base by conducting surveys internally every few months. This provides inputs for Artificial Solutions' 150-plus research and development team to track customer demands, which enhances the capability of the Teneo Platform and understand the demand for new applications in the market from the NLI platform.

Additionally, the company has also implemented JIRA, a popular issue-tracking solution that helps provide a better customer support system by handling bugs in the platform and issues related to project management effectively.

Product / Service Value

Frost & Sullivan is certain that Artificial Solutions enhances customer value with its unique pricing strategies for every type of client (businesses/developers/partners).

The company offers its technology platform and applications through two basic pricing models: licensing and partnership. The licensing model is focused on offering its existing applications developed for various purposes enabled by NLI. In addition, the company also offers a more customized pricing model through its partnership program. It enables customers to access the patented technology underlying the Teneo Platform to develop or integrate applications easily, thereby reducing time to market. Artificial Solutions provides a dedicated partner portal for continuous interaction with clients, helps them with technical support for integration of applications, and also contributes to clients' marketing efforts in promoting their applications. These are just some value-added benefits Artificial Solutions offers to clients.

Application Diversity

The Teneo Platform, with its unique NLI technology, is capable of powering various applications for a wide range of devices such as smartphones, consumer electronics, and wearables and supports a variety of industry sectors including finance, telco, retail, travel and healthcare. Through its business proposition, the Teneo Platform technology can be licensed by manufacturers of consumer electronics devices and smartphones to implement additional functionalities in their devices and gain a competitive edge in the market. Developers in the NLI technology market have the opportunity to use Teneo Platform technology to aid in application development. Through the partnership program, organizations from any industry can implement the Teneo Platform in their own systems to enhance customer satisfaction. This is made possible by improved NLI analysis of clients' interactions with their customers.

With the rapid rise of wearable devices and connected concepts such as the Internet of Things, Frost & Sullivan expects the company to see large revenues for the Teneo NLI platform in the next 5–6 years.

Commercialization Success

Only a few years after its commercialization, Artificial Solutions has already captured a huge number of customers (more than 200) for the Teneo Platform and its applications in the United States and Europe. As the next step in expanding its reach to other parts of the world, the company has opened an office in South America and has an active partner network in Asia.

With the growing trend of implementing customer self-service solutions to manage huge customer bases, Artificial Solutions expects a great opportunity for growth for its innovative and technologically advanced Teneo NLI Platform in the above mentioned sectors in the near future.

Conclusion

Frost & Sullivan's independent analysis of the Natural Language Interaction Platforms market clearly shows that the Teneo Platform, Artificial Solutions' NLI solution, offers competitive advantages, such as understanding natural language in both text and speech, gathering in-depth conversational data, and providing accurate and intelligent outputs to its users. Incorporating a host of feature sets and advanced natural language interaction technology in the Teneo Platform, Artificial Solutions gives customers from every industry and of all sizes the ability to integrate NLI into their product portfolio in a seamless manner. In recognition of the innovative capabilities of the Teneo Platform to enable development of advanced applications, Frost & Sullivan is pleased to award Artificial Solutions the 2014 Enabling Technology Leadership Award in Natural Language Interaction platforms.

Enabling Technology Leadership

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again. Everything is truly about the customer—and making those customers happy is the cornerstone of any long-term successful growth strategy. To achieve these goals through technology leadership, an organization must be best-in-class in three key areas: (1) take into account what your competitors are, and are not, doing; (2) meet customer demand with a comprehensive, value-driven product or service portfolio; and (3) establish a brand that resonates deeply with customers and stands apart from other providers. To achieve best-practice levels in brand, demand, and positioning is a rare and significant accomplishment, and that is why Frost & Sullivan celebrates it with the Enabling Technology Leadership Award. Recipients of this award represent the top ten percent of their industry: the other ninety percent can't keep up.

Key Benchmarking Criteria

For the Enabling Technology Leadership Award, Frost & Sullivan evaluated the total client experience and strategy implementation excellence according to the criteria detailed below.

Customer Value Excellence

- Criterion 1: Total Customer Experience
- Criterion 2: Product/Service Value
- Criterion 3: Purchase Experience
- Criterion 4: Ownership Experience
- Criterion 5: Service Experience

Technology Excellence

- Criterion 1: Commitment to Innovation
- Criterion 2: Commitment to Creativity
- Criterion 3: Stage Gate Efficiency
- Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

The Intersection between 360-Degree Research and Best Practices Awards

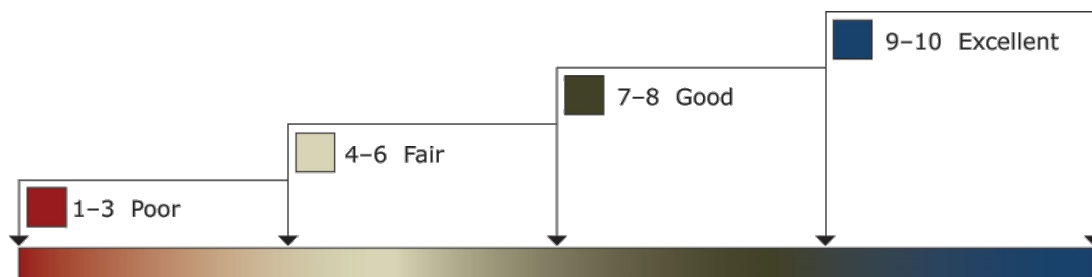
Research Methodology

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.



Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This analytical tool compares companies’ performance relative to each other. It features criteria unique to each award category and ranks importance by assigning weights to each criterion. The relative weighting reflects current market conditions and illustrates the associated importance of each criterion according to Frost & Sullivan. This tool allows our research and consulting teams to objectively analyze performance, according to each criterion, 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.



Best Practice Award Analysis for Artificial Solutions

Decision Support Scorecards: Enabling Technology Leadership

The Decision Support Scorecard, shown below, includes all performance criteria listed and illustrates the relative importance of each criterion and the ratings for each company under evaluation for the Technology Leadership Award. The research team confirms the veracity of the model by ensuring 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. Finally, 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: Technology Excellence

<i>Measurement of 1–10 (1 = poor; 10 = excellent)</i>	Award Criteria					
Customer Value Excellence	Total Customer Experience	Product/Service Value	Purchase Experience	Ownership Experience	Service Experience	Weighted Rating
Relative Weight (%)	20%	20%	20%	20%	20%	100%
Artificial Solutions	9	9	9	9	9	9
Company 2	7	7.5	7	7	7	7.1
Company 3	6.5	6.5	6.5	6.5	6.5	6.5

Criterion 1: Total Customer Experience

Requirement: Customers receive exceptional impression at every stage of the purchase cycle

Criterion 2: Product/Service Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market

Criterion 3: Purchase Experience

Requirement: It is as simple for salespeople to sell the product or service as it is for the customer to buy the product or service

Criterion 4: Ownership Experience

Requirement: Customers are proud to own and use the company's product or service

Criterion 5: Service Experience

Requirement: Customer service is accessible, fast, and stress-free

Decision Support Scorecard: Technology Excellence

<i>Measurement of 1–10 (1 = poor; 10 = excellent)</i>	Award Criteria					
	Commitment to Innovation	Commitment to Creativity	Stage Gate Efficiency	Commercialization Success	Application Diversity	Weighted Rating
Technology Excellence						
Relative Weight (%)	20%	20%	20%	20%	20%	100%
Artificial Solutions	9.5	9.5	9	9	9.5	9.3
Company 2	8	7.5	7.5	7.5	7.5	7.6
Company 3	6	6	6	6	6	6

Criterion 1: Commitment to Innovation

Requirement: Conscious, ongoing development of an organization culture that supports the pursuit of groundbreaking ideas

Criterion 2: Commitment to Creativity

Requirement: Employees known for pushing the limits of form and function, and who are unafraid to pursue “white space” innovation

Criterion 3: Stage Gate Efficiency

Requirement: A process that moves creative, groundbreaking concepts quickly and profitably from early-stage investments to late-stage prototyping

Criterion 4: Commercialization Success

Requirement: A proven track record of taking new technologies to market with a high rate of success

Criterion 5: Application Diversity

Requirement: The development of technologies that serve multiple purposes and can be embraced by multiple user types

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>.