

**Award Description**

Frost & Sullivan’s Technology Innovation Award is bestowed upon a company (or individual) that has carried out new research, which has resulted in innovation(s) that have or are expected to bring significant contributions to the industry in terms of adoption, change, and competitive posture. This award recognizes the quality and depth of a company’s research and development program as well as the vision and risk-taking that enabled it to undertake such an endeavor.

**Research Methodology**

To choose the award recipient, Frost & Sullivan’s analyst team tracks innovation in key hi-tech markets. The selection process includes primary participant interviews and extensive primary and secondary research via the bottom-up approach. The analyst team shortlists candidates on the basis of a set of qualitative and quantitative measurements. The analysts also consider the pace of research and technology innovation, and the significance or potential relevance of the innovation to the overall industry. The ultimate award recipient is chosen after a thorough evaluation of this research.

**Measurement Criteria**

In addition to the methodology described above, there are specific criteria used to determine the final rankings. The recipient of this award has excelled based on one or more of the following criteria:

- Significance of the innovation(s) in the industry, and across industries (if applicable)
- Potential of the products of innovation(s) to become industry standard(s)
- Competitive advantage of innovation vis-à-vis other related innovations
- Impact (or potential impact) of innovation(s) on company or industry mind share and/or company bottom line
- Breadth of intellectual property related to the innovation(s), that is, patents, scientific publications, papers in peer-reviewed journals.

**2007 North American Frost & Sullivan Award for Technology Innovation**

**Award Recipient: Time Domain Corporation**

The 2007 Frost & Sullivan North American Technology Innovation Award in the field of ultra wideband technologies for defense and surveillance goes to Time Domain Corporation (TDC) in recognition of its contribution to the industry with its ultra wideband technology (UWB)-based PulsON® technology. This technology platform has tremendous potential for enabling an entirely new range of wireless applications and is expected to enhance the performance metrics of existing wireless application benefiting the consumer markets at large.

TDC, Huntsville, USA, is a privately owned, emerging technology company. The company possesses a well-established technology portfolio in UWB and has used its expertise in developing a wide range of UWB tracking, sensing, telemetry, and sense-through-the-wall products aimed at safety, security, and logistics applications. These products are used in commercial, industrial, and military markets.

The organization, which was founded as a privately funded firm by a group of technologists, which focuses on UWB precision location solutions, has been a part of many successful defense projects funded by Small Business Innovation Research (SBIR). Systems developed by TDC assist in tracking dismounted soldiers and first

responders, locating items in a building, saves money by efficient use of mobile equipment, and improves processes based on accurate asset accountability. Having miniaturized the technology to silicon, TDC is collaborating with commercial and government partners to effectively develop products that meet futuristic demands.

TDC identifies itself for its PulsON UWB technology. PulsON UWB technology is a unique technology with the capability of fusing radar, positioning, and wireless communications into a single chipset. Usage of an UWB swath of spectrum and a variety of transmission reception and modulation techniques characterize the evolution of PulsON technology.

PulsON technology is unique in that it sends millions of coded pulses per second across an UWB spectrum instead of traditional sine waves. By doing this, the technology delivers high speed and high performance capabilities for communications, radar, and precision location tracking applications. Ultra short duration pulses yield UWB signals; extreme low power, excellent immunity to interference from other radio systems, high bandwidth multi-channel performance, and co-existence with existing spectrum users are some of the key features of PulsON technology that make it a very successful technology.

PulsON 210 is one of the earliest products of TDC. The system, which was developed several years ago, was a very successful product that served the demands of precision tracking, radar, and communication systems. Recent development initiatives at TDC have focused on miniaturizing this product further to launch it as an advanced PulsON 400 UWB chip in the market. The small package and efficiency of the chip highlights the initiatives of TDC to enhance the performance metrics of the technology consistently. Surveillance and security applications are the target markets of PulsON 400 technology. TDC serves the strong demands from military for unattended ground sensors and there is a similar demand from military for Homeland Security for border fences and critical infrastructure primitive fencing to detect and track intruders who try to cross borders and boundaries. The high fidelity and coherent nature of TDC's UWB technology not only helps identifying targets but also classifying them. With the right price point, TDC expects that PulsON 400 will be able to target home security applications as well.

Time Domain's newest product, +PLUS, is a precision location UWB System that is a result of the development initiative based on UWB technology for applications outside the surveillance sector. TDC's +PLUS is targeted at real time location systems industry to locate desired entities with a very small long duration tag tracked by built-in infrastructure in a building. The systems could be ideally deployed in hospitals for tracking patient, doctors, nurses, and equipment.

Thus, TDC has established its UWB technology platform and developed products that support demanding application domains in the defense and commercial markets.

TDC stands out among a lot of competing organizations in its approach toward growth. The way the organization has traversed across the development cycle has been very structured. During the process of growth, it has clearly understood the need to continuously explore the capabilities of the technology and educate the industry in its capabilities. Even at a developed stage, the firm's strategy to help the industry grow, and to grow the organization in line with the industrial growth is commendable.

With a strong platform in UWB technology, the company initially strived to find out the potential applications of the technology. It had rightly decided to serve defense application demands, which enabled it to project the potential of its technology. With a good number of defense projects completed successfully, the organization was able to demonstrate the power of the technology in the industrial space. The company slowly shifted to a phase where it took the technology into the market wherein it had to respond to specific market pulls. Responding to these market pulls further gave them clarity into the nature of applications it had to serve, to establish itself as a dominant player in the market. The focus gained was to such an extent that it also started to become very selective about the nature of defense projects it would serve. The decision to shift from a pure technology development firm to a product manufacturing firm at the right point of time is another highlighted decision, which projects the strategic expertise of the organization. It had identified its performance strengths through its collaborations and decided that it would be capable at one point in time to develop its own products instead of licensing its technology to collaborators for product development. It has further defined its technology's potential in the civilian space, to be able to serve a sector, which will have demands in high volumes.

Thus, it is very apparent that the company practices have handled the performance potential of an evolving technology very effectively. The company has consistently focused on developing and refining its technologies and has had a funneling approach in determining the applications sectors it would serve. Further, TDC has filed and obtained a creditable number of patents for systems based on UWB technology, which is an endorsement to the development potential of the company. As of December 2006, TDC has over 196 granted or filed patents that include about 97 U.S. patents issued and 31 U.S. patents pending. The commitment to establish itself as an efficient technology developer in the industrial space is perhaps the major reason behind the current state of development of TDC.

Thus, TDC has had a very strong technology platform on which it has built the PulsON technology. It has further adopted the right strategies to explore the capabilities of the technology and demonstrated the potential in the industrial space with a number of products and applications. It has been able to serve effectively both the defense and civilian application domains and has a clear perspective of how it will carry its technology from here to serving the future industrial needs of this technology. Frost & Sullivan therefore recognizes the capabilities of PulsON

technology and honors Time Domain Corporation with the 2007 Technology Innovation Award.

### **About Best Practices**

Frost & Sullivan Best Practices Awards recognize companies in a variety of regional and global markets for demonstrating outstanding achievement and superior performance in areas such as leadership, technological innovation, customer service, and strategic product development. Industry analysts compare market participants and measure performance through in-depth interviews, analysis, and extensive secondary research in order to identify best practices in the industry.

### **About Frost & Sullivan**

Frost & Sullivan, a global growth consulting company, has been partnering with clients to support the development of innovative strategies for more than 40 years. The company's industry expertise integrates growth consulting, growth partnership services, and corporate management training to identify and develop opportunities. Frost & Sullivan serves an extensive clientele that includes Global 1000 companies, emerging companies, and the investment community by providing comprehensive industry coverage that reflects a unique global perspective and combines ongoing analysis of markets, technologies, econometrics, and demographics. For more information, visit [www.frost.com](http://www.frost.com).