



2014 European In-Memory Data-Grid Solution  
New Product Innovation Leadership Award



FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

## Background and Company Performance

### *Industry Challenges*

Today's business applications are mostly built on top of a multi-tiered approach, in which individual layers of the architecture communicate with each other through a cluster architecture configuration to operate the application. However, Frost & Sullivan recognizes that this complex multi-tier architecture is often hard for system administrators to manage, leads to several challenges in terms of performance bottlenecks, and increases the costs of monitoring and managing complex applications.

Frost & Sullivan notes that scalability is another notable challenge faced by organizations when managing advanced, complex enterprise applications. A traditional tier-based architecture is not suitable for mission-critical application scenarios, which require high scalability. Traditional solution providers often integrate additional hardware to improve the scalability of a system. However, this approach leads to high latency and directly affects performance due to additional nodes on the tiers. The disk I/O and the network of a traditional clustered architecture simply fail to meet the demand for a scalable and low-latency system.

Handling data collected from various data sources also brings in performance issues for traditional application management platforms. Managing and processing data through batch processing fails to provide real-time insights to users while processing large data volumes.

Frost & Sullivan's research reveals that in order to address these performance, scalability, and cost-of-maintenance issues of complex enterprise applications, Israel-based GigaSpaces Technologies has come up with a fast data processing architecture called GigaSpaces XAP (eXtreme Application Platform). XAP incorporates unique data processing technologies, which can scale seamlessly according to the needs of organizations and reduce system latency to provide real-time insights to users.

### *GigaSpaces Technologies' Visionary Innovation and Product Excellence*

#### **Positioning:**

Frost & Sullivan's competitive analysis finds that GigaSpaces XAP is uniquely positioned in the market as an application virtualization platform that ensures high scalability, extreme latency, and real-time data processing for mission-critical analytical applications.

Conventional approaches require separate hardware to manage tasks, the grid, databases, and the network. However, the existence of separate system layers with different clustered models on different platforms makes scaling and communicating with every layer difficult for the computing system.

Thus, while processing massive data volumes, the grid architecture slows down due to multiple network hops needed for communicating and retrieving data from the database.

Compared to the traditional architecture, GigaSpaces implements a single integrated platform for the memory grid and computational engine.

By including data, messaging, and processing within a single platform, quick communication among processes is achieved. As a result, data is available immediately without any latency or network hops in the system, which ensures real-time content delivery. This unique approach helps GigaSpaces XAP speed up data delivery and enhance risk management. Amidst increasing resource requirements, the end-to-end elasticity capability of the platform helps every system component to scale seamlessly, which is not possible with competing solutions using traditional tier-based architecture.

**Design:**

The GigaSpaces XAP solution leverages a set of technologies to meet the primary demands in the market for high availability and high scalability of application data.

Unlike traditional systems, which store data on physical I/O databases, GigaSpaces stores data in-memory, which enables massive data from different sources to be processed without delay. The in-memory data grid architecture of the GigaSpaces XAP solution has the capability to parallelize large volumes of data across multi-core distributed environments. Frost & Sullivan's research finds that this ensures the guaranteed delivery of data with low latency and eliminates downtime when compared to competing solutions.

To enhance support for Big Data analytics processing, the company has also included built-in integrators for the Hadoop, Cassandra, and MongoDB databases within its in-memory data-grid platform. The specially designed plugins developed by the company for Big Data integration process data automatically as the data flow into the system. This technique reduces the processing time and computational time for the system significantly by eliminating the requirement to map tasks before processing. The inclusion of these databases within a single platform enables the collection and processing of large volumes of data from various data sources in real-time, thereby improving the availability of data for the users.

To further bolster the capabilities of the XAP solution, Gigaspaces has come up with a new solid-state drive (SSD) based storage plugin called Xap MemoryXtend. The Xap MemoryXtend comprising of software based SSD library and hardware SSDs enables applications to leverage the benefits of low cost flash data storage along with its parallel processing and analysis capability in real-time. Gigaspaces support any SSDs available in the market thereby improving the flexibility for the users. Since SSD costs much less than traditional RAM for IMDG, the total cost of ownership is reduced significantly by using MemoryXtend plugin from Gigaspaces.

In a standard test performed with SSD, the price-performance compared with RAM IMDG, SSD based IMDG delivered a significant gain of 3.6 times better write and 2.1 times better read operation.

**Reliability and Quality:**

Frost & Sullivan analysis confirms that continuous availability of data is the key to enhancing the reliability and quality of a data-grid solution. GigaSpaces maintains data integrity with 100% transactional data handling by utilizing its innovative, real-time primary hot-backup replication mechanism for all in-memory transactions. It uses a multi-site data replication process, which replicates data between peer nodes to maintain reliable, high-performance, failure-proof data consistency across the data grid.

To further enhance the quality of the system, GigaSpaces also incorporates backup and self-healing techniques, which provide the system with functionalities like sub-second failover protection and disaster recovery. The solution ensures that at least one backup copy of the in-memory data is constantly available to handle failover instances and also keeps an additional copy to recover the entire in-memory data grid in case of a complete shutdown.

**Aspirational Ideals:**

GigaSpaces XAP has included .NET LINQ (Language Integrated Query) support in the latest version of its XAP solution. LINQ provides the flexibility for users to write SQL-like syntax while writing code for filtering data and screening information from large data sets. Since SQL is widely used as a query language for handling relational and non-relational databases, the integration of LINQ offers great value to developers in terms of flexibility for system handling.

The XAP solution can be deployed over the cloud to reduce the cost of deployment for customers. The solution can also be integrated with any third-party cloud infrastructure. This allows customers to integrate the XAP in-memory solution into their own cloud backup systems and offers additional flexibility and security for users. The company has also developed a platform called Cloudify to automate the deployment of applications on the cloud. Cloudify offers a simple cloud API interface, which involves easy click-to-install steps for application management. It enhances customer value, especially for small and medium organizations that need a cost-effective in-memory solution for application management.

**Unmet Needs:**

GigaSpaces XAP provides full application management functionality, from front-end load balancing to back-end database management, by utilizing the XAP's in-memory data grid architecture. Frost & Sullivan's research shows that the XAP solution addresses all three of the major challenges in the application management space—performance, scalability, and availability.

Keeping terabytes of application data closer to the processing unit by utilizing a caching mechanism helps GigaSpaces to effectively address performance bottleneck issues.

Unlike traditional physical I/O, where data need to be transferred from the database, the in-memory technique helps to eliminate the transaction delay for GigaSpaces.

The XAP provides optimized load balancing, linear scaling, and a smart resource utilization technique. This enables the solution to provide a mechanism for deploying applications elastically to seamlessly handle loads.

For mission-critical business applications, a key requirement for a data grid platform is data availability. With its hot-backup mechanism and automatic recovery technique for transactional data failures, the XAP ensures the consistency of data availability across the data grid.

**Match to Needs:**

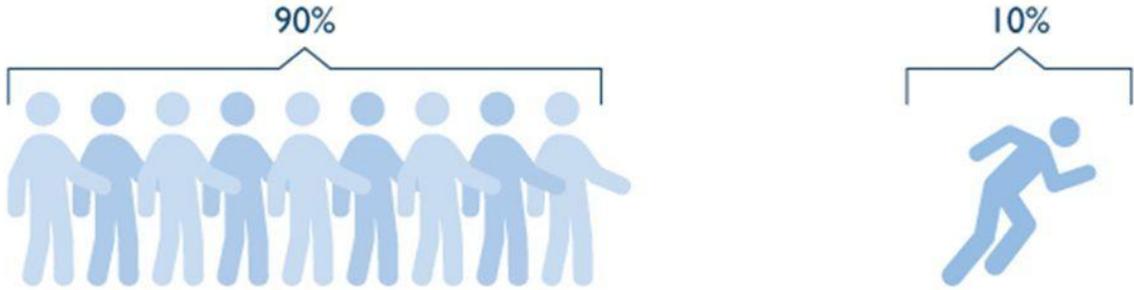
GigaSpaces Technologies believes that customer feedback is the best source of information for the development team to improve its product features and address the issues in the company's existing solutions. To match customer needs, the company conducts direct surveys with its customers and understands the new feature sets that are in demand. The company also discusses its product plans for future releases of solutions with important customers through its advisory program. In addition, GigaSpaces constantly tracks the market trends and other developers in the space by attending conferences and following reports from various research firms.

*Conclusion:*

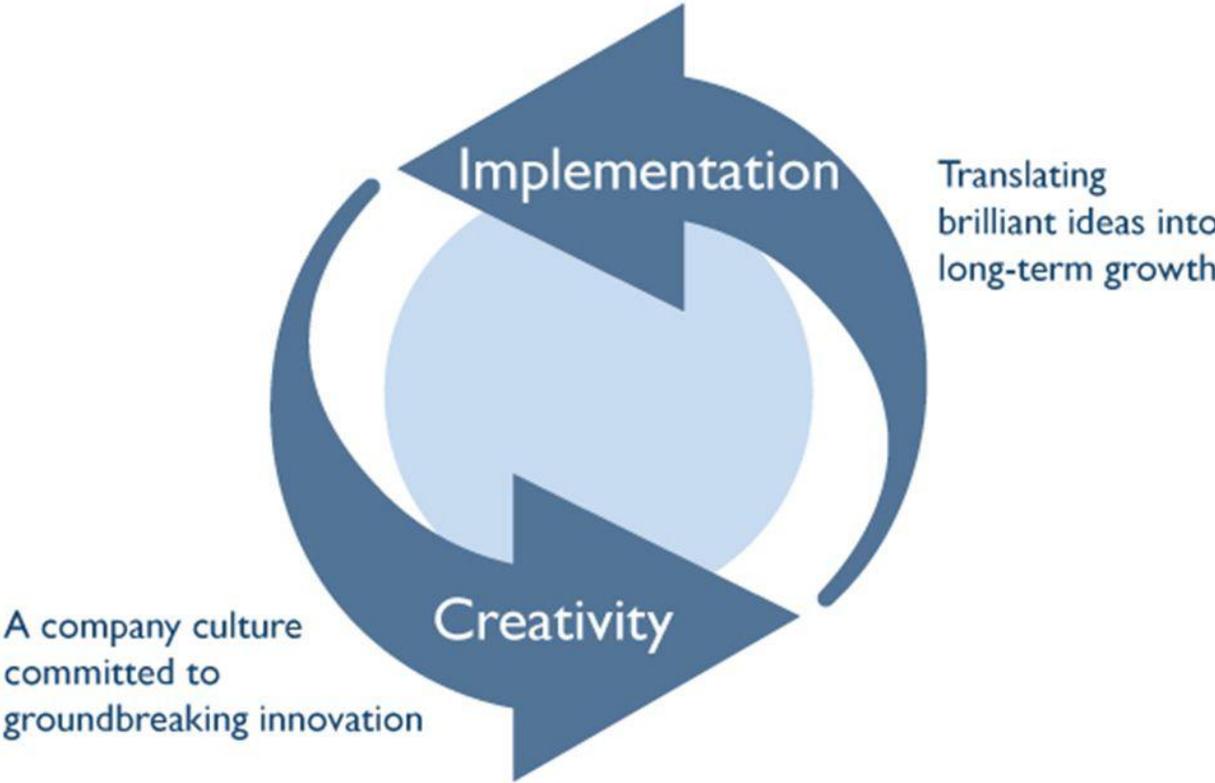
Frost & Sullivan's independent analysis of the In-Memory Computing market clearly shows that GigaSpaces Technologies' novel in-memory data-grid solution—the XAP In-Memory Computing Platform—offers the best-of-breed technologies, such as in-memory data processing and big data integration, to provide key competitive advantages through high scalability, availability, and performance. In recognition of the product's innovative capabilities, Frost & Sullivan is pleased to recognize GigaSpaces Technologies as the recipient of the 2014 New Product Innovation Leadership Award in the In-Memory Data-Grid Solution market.

## New Product Innovation Leadership

Ultimately, growth in any organization depends upon continually introducing new products to the market, and commercializing those products to the greatest extent possible. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, addressing end user needs and differentiating from the competition. To achieve and sustain such a standard is a rare and significant accomplishment, and that is why Frost & Sullivan celebrates it with the New Product Innovation Leadership Award. Recipients of this award represent the top ten percent of their industry: the other ninety percent just can't keep up.



Ultimately, innovation is about finding a productive outlet for creativity – for translating ideas into things people want to buy, and doing it over and over again. Even a very good idea – or even a series of very good ideas – will amount to nothing without successful implementation at each stage of development and commercialization. Creativity and implementation are therefore two sides of the same coin, as explored further below.



### Frost & Sullivan’s Global Research Platform

Frost & Sullivan maintains more than 50 years in business and is a global research organization of 1,800 analysts and consultants who monitor more than 300 industries and 250,000 companies.

The Company's research philosophy originates with the CEO's 360 Degree Perspective, a holistic research methodology that encourages us to consider growth challenges, and the solutions companies employ to solve them, from every angle. This unique approach enables us to determine how best-in-class companies worldwide manage growth, innovation and leadership. Based on the results of our research in new product innovation leadership, Frost & Sullivan is proud to present the 2014 European New Product Innovation Leadership Award in the In-Memory Data-Grid Solution market to GigaSpaces Technologies.

## Key Benchmarking Criteria

For the New Product Innovation Leadership Award, we evaluated the total client experience and strategy implementation excellence according to the criteria detailed below.

### Visionary Innovation

- Criterion 1: Unmet Needs
- Criterion 2: Use of Mega Trends
- Criterion 3: Pioneering Best Practices
- Criterion 4: Blue Ocean Strategy
- Criterion 5: Aspirational Ideals

### Product Excellence

- Criterion 1: Match to Needs
- Criterion 2: Reliability and Quality
- Criterion 3: Product/Service Value
- Criterion 4: Positioning
- Criterion 5: Design

## 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

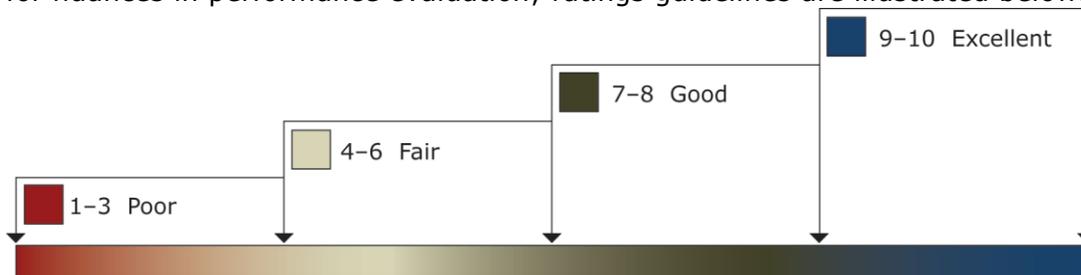
### 360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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 and Matrix*

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard and Matrix. 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 GigaSpaces Technologies**

The Decision Support Scorecard, shown below, includes all performance criteria listed on page 8 and illustrates the relative importance of each criterion and the ratings for each company under evaluation for the New Product Innovation 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 FOR NEW PRODUCT INNOVATION LEADERSHIP AWARD (ILLUSTRATIVE): VISIONARY INNOVATION

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>	Award Criteria					
	Unmet Needs	Use of Mega Trends	Pioneering Best Practices	Blue Ocean Strategy	Aspirational Ideals	Weighted Rating
Visionary Innovation						
<b>Relative Weight (%)</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>100%</b>
GigaSpaces Technologies	9.5	9.0	9.0	9.0	9.0	9.1
Company 2	7.5	7.0	7.0	6.5	7.0	7.0
Company 3	6.5	6.0	6.0	6.0	7.0	6.3

**Criterion 1: Unmet Needs**

Requirement: A clear understanding of customers’ desired outcomes, the products that currently help them achieve those outcomes, and where key gaps may exist

**Criterion 2: Use of Mega Trends**

Requirement: Ability to incorporate long-range, macro-level scenarios into strategic plans, thereby anticipating and preparing for multiple futures that could occur

**Criterion 3: Pioneering Best Practices**

Requirement: A nothing-ventured-nothing-gained approach to strategy implementation that results in processes, tools, or activities that generate a consistent and repeatable level of success

**Criterion 4: Blue Ocean Strategy**

Requirement: Proven track record of creating new demand in an uncontested market space, rendering the competition obsolete

**Criterion 5: Aspirational Ideals**

Requirement: A willingness to look beyond the simple goal of generating a profit to embrace a more powerful ideal of bringing greater value to customers or the planet

DECISION SUPPORT SCORECARD FOR NEW PRODUCT INNOVATION LEADERSHIP AWARD (ILLUSTRATIVE): PRODUCT EXCELLENCE

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>	Award Criteria					
	Match to Needs	Reliability and Quality	Product/Service Value	Positioning	Design	Weighted Rating
Product Excellence						
<b>Relative Weight (%)</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>100%</b>
GigaSpaces Technologies	9.0	9.5	9.0	9.5	9.0	9.2
Company 2	7.0	6.5	7.0	7.5	7.0	7.0
Company 3	7.0	6.0	6.5	6.5	6.0	6.4

**Criterion 1: Match to Needs**

Requirement: Customer needs directly influence and inspire a product’s design and positioning

**Criterion 2: Reliability and Quality**

Requirement: The product consistently meets or exceeds customer expectations for performance and length of service

**Criterion 3: Product/Service Value**

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

**Criterion 4: Positioning**

Requirement: The product or service delivers a unique, unmet need that competitors cannot easily replicate or replace

**Criterion 5: Design**

Requirement: The product’s visual presentation makes it easy to use, and makes customers happy to use it

*Decision Support Matrix*

Once all competitors 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 are not yet operating at best-in-class levels.

# Decision Support Matrix

Positioning companies according to product excellence and visionary innovation



## Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan's analyst team follows a 10-step process (illustrated below) to evaluate award candidates and assess their fit with the 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

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
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>Assemble board of advisors</b>	Finalize the selection of the best-practice award recipient	<ul style="list-style-type: none"> <li>• Present candidates to a Board of Advisors</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>	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>.

## Disclaimer

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