Technology Innovation Award
Network Services BQM
Global, 2011

Frost & Sullivan's Global Research Platform

Frost & Sullivan is in its 50th year in business with 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™, which serves as the foundation of its TEAM Research™ methodology. This unique approach enables us to determine how best-in-class companies worldwide manage growth, innovation and leadership. Based on the findings of this Best Practices research, Frost & Sullivan is proud to present the 2011 Global Technology Innovation Award in Network Services Business Quality Management to Clarity.

Significance of the Technology Innovation Award

Key Industry Challenges

Communication service providers have access to an opulent amount of valuable data regarding customers, usage, preferences, and problems. There is immense, untapped value in employing this data and OSS/BSS that enable service provider operations to aid internal business units responsible for marketing, product development, customer and partner support, finance, etc. However, these market realities have been encumbered by the technical realities of silos within networks, IT needs, and OSS/BSS that do not interoperate and are virtually invisible to each other. Existing OSS/BSS is isolated by network infrastructure and the service type resulting in duplication of systems and data that quickly becomes unreliable. Critical business quality management issues for communication service providers include harnessing operational data to improve business agility, prioritizing investments in infrastructure and operations, and capital efficiency.

Communication service providers are undergoing a transformation of organizations, processes, and systems to build a foundation for competing and prevailing in a connected economy. To compete effectively in the new market realities of converged, enhanced services, CSPs will need to resemble world-class retailers. For many, this means shifting from acting as a builder and provider of connectivity and bandwidth to becoming a demand-driven provider of connected products from multiple sources. This goes beyond agile infrastructure and dynamic provisioning, although those represent serious challenges. It means thinking, operating, and measuring progress like a retailer, whose products are an amalgamation of intermediate goods and end products from other suppliers. It means having visibility to all links in the supply and distribution chains supported by a robust and fully integrated set of distribution channels to provide a consistent, high-quality experience to the customer. It means capturing and using the

abundant amount of data available from the infrastructure to better operate, maintain, and sell products to customers.

Data is correlated from many sources including the infrastructure to determine the variety of quality metrics that are important to the communication service provider's business. Voluminous stores of customer data are evaluated against millions of transactions to understand utilization while faults are being reported from every corner of the network, servers, databases, applications, and customer calls for support. The primary drivers for capturing and using this mountain of data are to rapidly deliver new products, reduce costs, and improve quality. Understanding problems and failures leads to improved processes, more reliable systems, and fewer errors; all of which result in operational efficiencies, better products, and lower costs. Numerous fault, configuration, transaction, security, and performance parameters are continually monitored and used to determine key performance indicators for everything from network utilization to customer experience and product effectiveness. All of this monitoring is designed to understand the quality of the infrastructure, the service, the customer experience, and the product.

What has not been widely addressed by OSS/BSS transformation is the impact of operations on the business itself. There are a number of business metrics that, while critical to budgeting and decision-making, are often derived by estimates or they use only a few scattered metrics rather than consistent calculation and measurement. CSPs, like any business, need to understand when the cost of acquiring, building, operating, maintaining, and supporting assets exceeds the benefit. Efficiency metrics provide insight into that balance. The data to determine these measures of business quality are derived from the infrastructure, with inputs from multiple OSS/BSS, financial, human resources, and accounting systems. The metrics enable communication service providers to do a better job of prioritizing investment and building business cases for continued investment, upgrade or replacement of costly infrastructure and systems.

Informally known as "bang-for-the-buck", capital efficiency reflects return-on-investment (ROI) and total cost of ownership (TCO) against revenue generation. For example, delivering self-care features may prove more capital efficient than a CRM system upgrade because the cost per support call/inquiry is dramatically reduced. Likewise, decisions to invest in adding capacity should be aligned with both demand and profitability. If, for example, an investment of $100k delivers 90% of required functionality, is it worth spending another $100k for the remaining 10%? Without on-going correlation of multiple data inputs from all layers of the business, investment decisions, and capital spending priorities are likely based on incomplete or inaccurate information.

Maximizing the utilization of resources (people, infrastructure, systems, and capital) requires the optimization of operating processes and the elimination of waste. Whether investing in process changes, automation, system upgrades, adding staff, training, or equipment; Communication service providers are focused on improving the return on those investments. Business Quality Management is the capture and correlation of metrics

that objectively reveal the real costs and benefits of investments in people, processes, and technology. As service providers continue to transform operations, modernize processes and systems, and evolve into the role of retailer, BQM metrics become more important than ever to delivering a quality customer experience and monetizing investments.

Key Benchmarking Criteria for the Technology Innovation Award

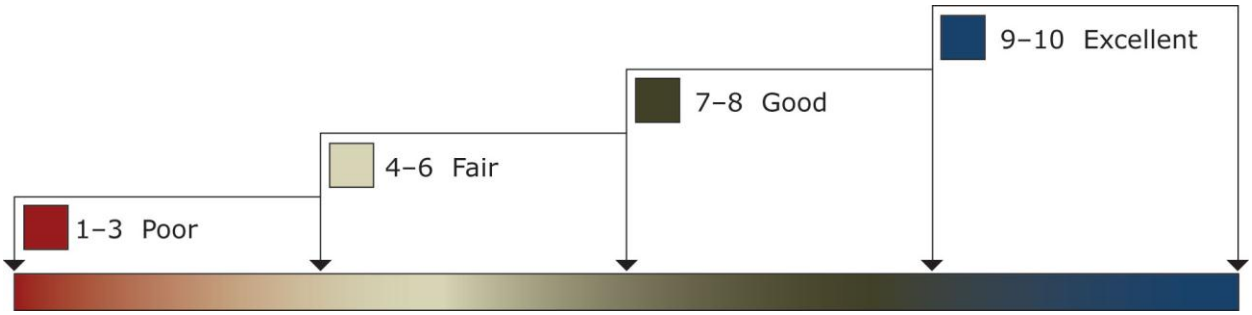
For the Technology Innovation Award, the following criteria were used to benchmark Clarity's performance against key competitors:

- **Uniqueness of the Technology**
- **Impact on New Products/Applications**
- **Impact on Functionality**
- **Impact on Customer Value**
- **Relevance of the Innovation to the Industry**

Decision Support Matrix and Measurement Criteria

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Matrix (DSM). The DSM is an analytical tool that compares companies' performance relative to each other with an integration of quantitative and qualitative metrics. The DSM 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. Fundamentally, each DSM is distinct for each market and Award category. The DSM allows our research and consulting teams to objectively analyze each company's performance on each criterion relative to its top competitors and assign performance ratings on that basis. The DSM follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are shown in Chart 2.

Chart 2: Performance-Based Ratings for Decision Support Matrix



This exercise encompasses all criteria, leading to a weighted average ranking of each company. Researchers can then easily identify the company with the highest ranking. As a final step, 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.

Chart 3: Frost & Sullivan's 10-Step Process for Identifying Award Recipients

Best Practice Award Analysis for Clarity

The Decision Support Matrix, shown in Chart 4, illustrates the relative importance of each criterion for the Technology Innovation Award and the ratings for each company under evaluation. To remain unbiased while also protecting the interests of the other organizations reviewed, we have chosen to refer to the other key players as Competitor 1 and Competitor 2.

Chart 4: Decision Support Matrix for Technology Innovation Award

Measurement of 1–10 (1 = lowest; 10 = highest)	**Award Criteria**					
	Uniqueness of the Technology	Impact on New Products/Applications	Impact on Functionality	Impact on Customer Value	Relevance of the Innovation to the Industry	**Weighted Rating**
Relative Weight (%)	**20%**	**20%**	**20%**	**20%**	**20%**	**100%**
Clarity	9	10	10	9	9	9.4
Competitor 1	9	7	8	7	7	7.6
Competitor 2	7	6	7	8	7	7.0

Criterion 1: Uniqueness of the Technology

Numerous OSS/BSS vendors deliver solutions for quality management; however, few have elevated their offerings to include Business Quality Management (BQM) metrics. The Clarity solution captures data from the network and IT infrastructure, correlates it with data from diverse business systems as well as databases and extrapolates operational, tactical, and strategic KPIs that are then displayed in dashboard format and/or used by planning and financial systems. The goal of the Clarity BQM solution is not to replace existing functionality but to exploit existing systems and data, augmenting functionality where necessary to execute an end-to-end process.

Best Practice Example: Clarity solutions currently manage more than 250 million customers for over 35 communication service providers. This vast and varied operational experience makes Clarity ideally suited to understand the complexities of BQM and deliver an innovative solution.

Criterion 2: Impact on New Products/Applications

The Clarity BQM solution lends itself to many industries and it can be readily adapted for electric, water and gas utilities. Data from the variety of sources must be continuously correlated to determine operational and performance metrics. Every metric requires multiple data inputs from numerous sources.

Best Practice Example: Clarity is currently deploying solutions for Western Power in Australia and Singapore's Intelligent Energy System pilot project for Singapore's Energy Market Authority.

Criterion 3: Impact on Functionality

Quality management functions exist at every level of the CSP business. Numerous fault, configuration, transaction, security, and performance parameters are continually monitored and used to determine key performance indicators for everything from network utilization to customer experience and product effectiveness. Monitoring of infrastructure quality, service quality, quality of the customer experience, and quality of the product are critical to determining service quality. Clarity BQM is an extension of service quality management that will prove critical to communication service providers of all sizes as they make business decisions regarding capital and operational investment. Given the variety of sources and users, ensuring the accuracy of business (or operational) data is a challenge. Data must be consistently aligned to ensure that the resultant metrics are accurate. Configuration, status and performance data are rapidly outdated and each user must have access to the same version of the truth.

Best Practice Example: Profit margins on capacity are razor thin (or regulated) for wholesale network operators, common carrier network operators, and nationalized network operators. Clarity's ability to deliver a system-wide view of operations and capture BQM data points enables communication service providers to optimize utilization of existing assets, reduce the amount of capital required to meet customer demand, and allocate resources where they are needed most. Properly implemented, Clarity BQM leads to better decision-making and investment strategies.

Criterion 4: Impact on Customer Value

CSPs own a coveted one-to-one relationship with customers that hundreds of providers including retailers, banks, application providers, and businesses of all types want to exploit. CSPs are in the unique position of being able to facilitate that access while still ensuring the quality of the customer experience. Large stores of customer data are evaluated against millions of transactions to understand utilization while faults are being reported from every corner of the network, servers, databases, applications, and customer calls for support. The primary drivers for capturing and using this mountain of data are to rapidly deliver new products, reduce costs, and improve quality.

Best Practice Example: As communication service providers across the globe consolidate network ownership and operations, there is a need to provide a centralized function for service assurance and deliver timely, accurate, secure BQM data to each provider that is utilizing the infrastructure. Clarity BQM data affects the design process and determines the prioritization and use of capital.

Criterion 5: Relevance of the Innovation to the Industry

Communication service providers have access to a great deal of data about customers, usage, preferences, and problems. There is tremendous value in utilizing the data and OSS/BSS that enable communication service provider operations to aid internal business units responsible for marketing, product development, customer and partner support, finance and operational groups of all type *(e.g. TM Forum Business Metrics Automation).* As communication service providers continue to transform operations, modernize processes and OSS/BSS, and evolve into the role of retailer, BQM metrics become more important than ever to delivering a quality customer experience and monetizing investments. The ability to capture and use data from the business (or operational) that is accurate, timely, and correlated with the rest of the business is invaluable to BQM and quality management of any type.

Best Practice Example: Too many business metrics that are critical to budgeting and decision-making are derived by estimate or use only a few scattered metrics rather than consistent calculation and measurement. The Clarity BQM solution formalizes infrastructure and operational KPIs to determine business metrics that are actionable and reliable for decision makers.

Conclusion

Competing as retailers is becoming reality for network service providers of all sizes, and to that end, each is trying to understand its operational, tactical and strategic posture. There is a wealth of data available from network and IT that, properly analyzed, can deliver numerous measurements of performance, quality and profitability while providing communication service providers with actionable data to help improve the customer experience. Clarity's ability to measure and understand quality metrics from all levels of the business provides BQM insight into 'what is working' and 'what needs some work' at the operational, tactical, and strategic levels of the business. Clarity BQM data is also indispensable for budgeting and prioritization of technology projects and measuring the value of transformation efforts. Based on Frost & Sullivan's independent analysis of the Global Network Services Business Quality Management space, Clarity is being recognized with the 2011 Global Technology Innovation Award.

The CEO 360-Degree Perspective™ - Visionary Platform for Growth Strategies

The CEO 360-Degree Perspective™ model provides a clear illustration of the complex business universe in which CEOs and their management teams live today. It represents the foundation of Frost & Sullivan's global research organization and provides the basis on which companies can gain a visionary and strategic understanding of the market. The CEO 360-Degree Perspective™ is also a "must-have" requirement for the identification and analysis of best-practice performance by industry leaders.

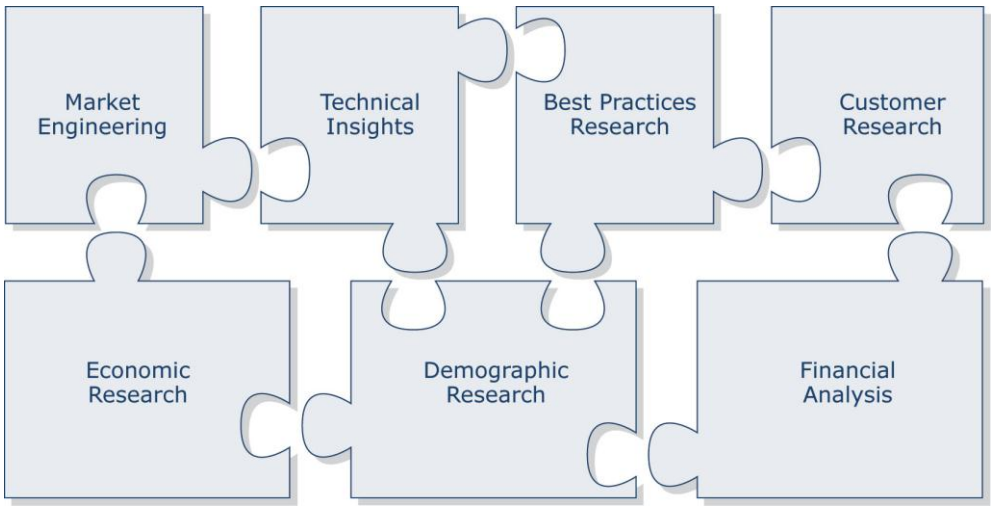
The CEO 360-Degree Perspective™ model enables our clients to gain a comprehensive, action-oriented understanding of market evolution and its implications for their companies' growth strategies. As illustrated in Chart 5 below, the following six-step process outlines how our researchers and consultants embed the CEO 360-Degree Perspective™ into their analyses and recommendations.

360-Degree Perspective™ Model

Critical Importance of TEAM Research

Frost & Sullivan's TEAM 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 seven of Frost & Sullivan's research methodologies. Our experience has shown over the years that companies too often make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Frost & Sullivan contends that successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. In that vein, the letters T, E, A and M reflect our core technical, economic, applied (financial and best practices) and market analyses. The integration of these research disciplines into the TEAM Research methodology provides an evaluation platform for benchmarking industry players and for creating high-potential growth strategies for our clients.

Chart 6: Benchmarking Performance with TEAM Research



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