

SSRI Partnership Conference: six corporations collaborate in pursuit of Six Sigma Quality

The Six Sigma Research Institute (SSRI) held its first Partnership Conference at the Galvin Center March 31 and April 1, 1992. Thirteen representatives attended from the SSRI partner companies — Asea Brown Boveri, Digital Equipment Corporation, Eastman Kodak, IBM, and Texas Instruments.

The objectives of this two-day meeting were to define the next "vision" for SSRI; extend the current goals and strategies; define the standardized approach for technology transfer; and promote greater synergism between the participating companies and the Institute.

In his opening address, Mikel Harry, director of SSRI, presented these objectives and stressed the need for a full sense of ownership and participation by each of the companies to make this consortium a functional reality. He reviewed the partnership obligations, which include funding, technical review support, training and implementation, and ongoing support of the structured authoring process. A review of SSRI current goals was discussed, which include:

- Develop and implement processes for publishing Best in Class methods and tools, as well as new breakthrough technologies.
- Develop a means to provide for short-cycle technology transfer.
- Provide a vehicle for developing statistical experts within each business unit to support the implementation of the key methods and tools.
- Secure and solidify external partnerships to support and extend the initiative.

After the opening remarks, each participating company representative presented an introduction to his/her company (annual sales figures, numbers of employees, chief market interests, etc.), and a prepared statement of what Six Sigma means to his or



her company. Presentations also included respective expectations of this alliance, and what strengths and unique contributions each brings to the table. Mikel reviewed the needs of all the participating companies in an effort to find common underlying themes and interests. The expectations of all partners concentrated on the following:

- "How-to" tools with step-by-step instructions for planning, organizing, and executing
- Software tools
- Training of in-house statistically oriented technology experts (black belts)
- Design focus for products, processes, and software
- Applications consulting with an emphasis on statistical process control and design of experiments
- Project management applications

Following remarks from Bill Wiggernhorn about the history of quality improvements at Motorola, the representatives were divided into mixed groups to consider their individual company's methods of technology transfer. The discussions focused on the common elements involved in the selection and training of "black belts" (statistically trained technology experts) within their companies, and the transfer of Motorola University/SSRI courses and products to the partners.

The fruitful results of these discussions were a solid indication that the representatives function well as mixed-company teams, and put common consortium interests first without jeopardizing the private interests and concerns of their individual companies.

SSRI plans to regularly hold similar partnership conferences to continue the free exchange of ideas and needs between partner companies.

Attendees at the conference included: (left to right, from bottom) Henry Altland, Richard Leonhardt, Richard Karm, Jack Prins, Jim Hack, Kathryn Linder, Carlton Coppersmith, Betty Crofton, Mikel Harry, Dick Gall, Susan Anderson-Khleif, Peter Kusel, Donald Allen, Paul Brault, Susan Hooker, William O'Hara, Connie Araps, Ken Hansen, Doug Mader, Al Gross, Jim Griffin, Duncan Rowles, and Reigle Stewart.

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Perspective

Six Sigma Research Institute ensures Motorola's competitive edge

I recently had an opportunity to meet with a diverse group of corporate leaders from Europe and North America. As our session concluded, we agreed that we share six terms whose further definition and implementation will help us survive the whitewater electronics and telecommunications environment of the 1990s and beyond. They are:



- Quality
- Total cycle time reduction
- Time to market
- Total cost reduction
- Global competitiveness
- Customer services

This issue of *Opportunities* is devoted to the consortium of companies who are also dedicated to defining and implementing the above terms, the Six Sigma Research Institute. Their uniqueness lies in each partner's commonality in the need to continuously improve quality, produce robust products and services while reducing costs and cycle time.

In addition, this organization is committed to continuing the energetic quest into new markets as well as to exchanging and leveraging technological and statistical breakthroughs via education and research.

Even more importantly, the Six Sigma Research Institute is committed to a worldwide rollout and institutionalization of its research results in five multi-national companies. The institute's staff, from industry and academia, are bound by the desire to address competitive and technology-driven challenges and then wisely utilize the output.

How do these developments affect the big picture for Motorola? The creation and support of the Six Sigma Research Institute is positioning and preparing our company to not only meet the apparent challenges that lie ahead, but it is also providing a resource to ready us for the now unknown factors that we will certainly face in the future. We salute their efforts.

A. William Wiggenhorn
President, Motorola University
and Corporate Vice President
of Training and Education

What is the Six Sigma Research Institute?

In late 1986, Motorola announced the achievement of Total Customer Satisfaction as the corporation's fundamental objective. To support this goal, five interrelated key initiatives were defined. Of these initiatives, achievement of Six Sigma Quality is paramount.

The Six Sigma thrust provides distinct advantages in this continuing quest for Total Customer Satisfaction. This must be achieved in the presence of increasing global competition and rapid technological change. These two factors emphasize the continuing need for a single foundation to unite the many aspects of product and service quality into an integrated strategic thrust.

When Motorola engineers contacted the major engineering schools in the U.S. to obtain the tools and methods needed to achieve Six Sigma Quality, it was learned that predefined tools to reach this level of quality did not exist. So Motorola created the Six Sigma Research Institute in May of 1990 to create these means for achieving the corporation's quality goals. Since strategic training



forms the cornerstone of Motorola's quality efforts, the Six Sigma Research Institute is affiliated with Motorola University.

The Six Sigma Research Institute's mission is to research and develop the theoretical framework and supporting tools necessary to accelerate the achievement of Six Sigma Quality, and to facilitate the subsequent transfer of such knowledge to Motorola's technical and managerial communities.

*A Message from
Mikel J. Harry, Ph.D.
Director, Six Sigma
Research Institute*

New technology brings new problems ... and new solutions

New technology brings new problems. The role of the Six Sigma Research Institute is to search out those problems, devise theories and tools to attack them, and figure out ways to quickly transfer those tools to the people who will use them.

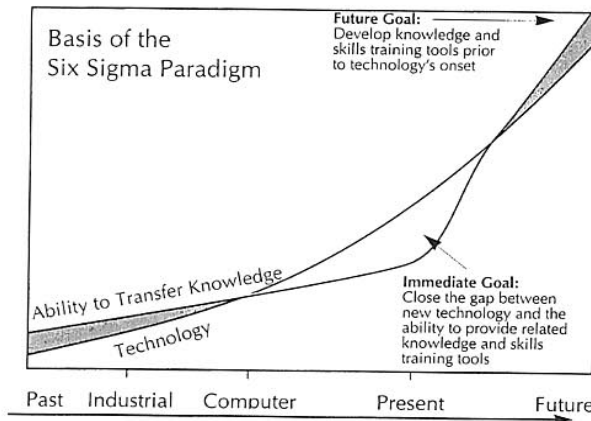
Total Customer Satisfaction, our overriding goal, is dependent on our ability to consistently deliver premier quality products and services. In our industry, quality products are dependent on our ability to control variation in our manufacturing processes.

Today, the statistical tools that we use to control that variation are very different from the tools we used 30 years ago. Changes in



Motorola and its partners in the Six Sigma Research Institute—IBM, DEC, Kodak, Texas Instruments, and Asea Brown Boveri—have united to bring about changes in the technology education process. Through our shared resources and technologies, we are devising ways to bring about a seamless union of learning and working. Together, we are working to embed technology education into the workplace.

Through the continuing development of educational tools and programs, such as the instructional design shell, the black box simulator, and the black belt certification process, we intend to empower our respective employees to take greater responsibility in



hardware and process engineering technology have forced these tool changes. As technology continues to evolve and product cycles continue to decrease, there will be less and less time to devise and implement process control strategies and tools. This means that we need to become more predictive in our abilities to control variation.

For example, we know that automation and computers will become a more integral part of controlling manufacturing processes. Today's manual methods of statistical process control will become more computer intensive; focus will shift away from the mechanics of control charts to the interpretation of computer program outputs. This means that the skill requirements of individuals working in manufacturing areas will change.

Today's methods and tools for transferring technical knowledge and skills to the workplace are not keeping pace with the information explosion around us. This has created a gap between new technology and our ability to implement and use it effectively.

developing their own training. In doing so, our companies will gain the ability to rapidly utilize new technologies because our employees will possess the knowledge and skills necessary to support them.

To keep pace with the technological evolution, the focus of the Institute must be divided. While we challenge current practices and propose new ways of doing things, we must also focus on the future, to anticipate technological changes and begin today, to create tools for tomorrow's problems before they occur.

As Motorola moves to and beyond its quality goal of Six Sigma, the Six Sigma Research Institute will focus on developing the strategies, the tactics, and the tools needed to get us there.

Dr. Harry is a senior member of the technical staff, and an associate member of both Motorola's Science Advisory Board (SABA) and the Government Electronics Group's Scientific and Technical Society.

Senior manager at DEC describes SSRI partnership

A renewed emphasis on acquiring knowledge is evident in today's businesses, moving major corporations toward a culture of total quality. To remain competitive, corporations are forming strategic partnerships to provide Best in Class products and services to their customers. The Six Sigma Research Institute has established five such partnerships since July of 1991 (see page one for a list of the partnering companies).

Digital Equipment Corporation (DEC) was the second of these companies to join efforts with SSRI. The mission of this partnership, established Q4, 1991, is:

To develop the tools and methods and instructional materials to accelerate the achievement of Six Sigma Quality.



Dick Leonhardt, a senior staff statistician at SSRI on a year-long assignment to Motorola, serves as partnership liaison for DEC. Since joining the Institute last fall, he divides his time between DEC in Maynard, Massachusetts, and Motorola in Rolling Meadows, Illinois. Dick brings the DEC perspective to SSRI and works with other DEC personnel to bring the SSRI-based tools and courses to DEC. Among his

many contributions, Dick assisted in the development of two new training programs—*RF Microwave Design and Analysis and Optimization*, and *Process Characterization Metrics*—which are currently being piloted at Motorola University. His responsibilities for these courses include participation, critique, and analysis of the pilots. Five modules of the *Encyclopedia of Six Sigma Tools* have been authored by Dick, with a focus on reliability analysis. He continues to provide ongoing support to other authors as they work through the structured authoring process that supports the Institute's publications.

Dick notes, "The quality programs that concentrate on manufacturing can yield great improvement over the way we used to manufacture products, and often the way we presently are manufacturing products, but this is not enough."

Courses developed by SSRI can be used by all of the partners involved, and have proven instrumental in uniting the companies in their pursuits of Six Sigma. Representatives from DEC, as well as other partners who have participated in course pilots, find them valuable in establishing a standardized approach to quality improvements.

The success of these pilots also leads SSRI to investigate the other businesses within Motorola and the companies involved which are in need of standard measurements of Six Sigma Quality.

"The basic statistical process control approach will only take you so far in your journey to Six Sigma," says Dick. "One must go beyond the manufacturing area, and realize that Six Sigma applies to everything. Other functional areas need to be looked at as far as how to assess, analyze, and achieve Six Sigma performance more efficiently and more effectively."

As the number of companies in partnerships with SSRI grows, involvement between the partners has increased dramatically. Representatives welcome the opportunity to exchange ideas on quality, and to develop and implement processes for Best in Class methods and tools.

Six Sigma Research Institute products

- Black Box Simulator
- Black Belt Development and Certification
- Motorola Technical Institute
- Instructional Design Shell
- Software programs
- Quality-focused training programs
- Consulting services
- Presentations
- Publications:
 - Encyclopedia of Six Sigma Tools*
 - Encyclopedia of Six Sigma Applications*
 - Handbook of Six Sigma Methodologies*
 - The Nature of Six Sigma*
 - Six Sigma Design Tolerancing*
 - Six Sigma Producibility Analysis and Process Characterization*
- Videotapes:
 - The Vision of Six Sigma*
 - Advanced Concepts of Six Sigma*
 - A Practical Example of Robust Design*
 - Basic Six Sigma Concepts*