Improving the way organizations run through participative planning and management.
The Challenges of Leading Successful Change at Babson College

A changing environment for higher education

In recent years the quality, relevance, and cost of higher education have come under increasing scrutiny and criticism, and we have seen many forces at work that demand changes in education. This is nothing new to people who are in education, or to parents and students who pay the bill. In my opinion, that strong criticism has been justified.

In order to be successful today, colleges and universities have to pay close attention to their business environment. We have customers (our students and the companies that hire them) and we have a product (education). Therefore, we must ensure that we are not pricing our product to cost, which is easy to do when you have a monopoly, but are pricing it to what the market will bear. Educational institutions do not have true monopolies, but over the past 15 years, they have been managed poorly and have allowed their costs to skyrocket. The situation is totally out of control. When an institution decides to do something new, which costs a certain amount of money, tuition is increased to cover the expense. There is rarely a discussion about what could be traded off, or what could be done differently, to offset those costs. Some schools have begun to pay attention to costs and are doing things differently, but there are still many large, reputable institutions that are not.

The business environment is changing around us. No longer will people accept the kinds of things that we’ve done in education. We cannot get away with teaching the students what we want to teach them, rather than what they might need in their education.

Many colleges and universities will continue to struggle with declining enrollments, student dissatisfaction, disenfranchised alumni, and public criticism. Well-known institutions of higher education, the sleeping giants that have never had to worry about competition in the past, will diminish in prestige due to lethargy. New leadership institutions will emerge. Some of these new leaders may not even be in the business of higher education at this time. What these leaders will have in common is the ability to effectively and efficiently design and deliver programs and services that meet the needs of their stakeholders. I believe that we at Babson College have engaged in making the necessary changes to serve our constituencies well in this regard. This article is a brief overview of what we have done.
# Three major changes at Babson

Over the past three years, three major change initiatives have been implemented at Babson College that will address the criticisms levied against higher education and enable us to better meet the needs of our students and other stakeholders. These include: (1) a new two-year MBA Program curriculum, (2) undergraduate curricular reform, and (3) reengineering of student based administrative services.

# Background on Babson College

Before entering a discussion about our changes, I want to give you a brief background on Babson College. We are a private business specialty school located about 20 miles west of Boston, in Wellesley, Massachusetts. We have about 140 full time faculty members, 1600 undergraduate students, and 1400 MBA students (200 full time and 1200 part time). Our undergraduates take over 50% of their courses in liberal arts, so I feel that it's a very strong program, and one that the entire college is very proud of.

# Change #1 — A New Two-Year MBA Program

After much input from our customers, including students and companies that employ our graduates, the Babson faculty curriculum committee for the graduate program discarded the traditional functional course program concept and developed a revolutionary curriculum that would meet the needs of tomorrow's managers. This curriculum not only addresses the concerns raised by the corporate world, but also enables students to learn in situations similar to the work environment they will encounter after graduation—business in a globally competitive environment. Babson’s revised two-year MBA curriculum was implemented in September 1993.

# The First Year Curriculum

Total Quality is integrated as a major theme occurring across the entire first year curriculum. Other themes include innovation as a strategic tool, entrepreneurial thinking, the importance of a global perspective, and the value of leadership.

The first year of the program is divided into four thematic modules under the unifying concept of “Entrepreneurial Management in a Changing Global Environment.” They are: (I) Creative Management in Dynamic Organizations; (II) Assessing Business Opportunities; (III) Designing and Managing the Delivery System; and (IV) Growing and Renewing Businesses. Students are exposed to accounting, finance, marketing, operations, organizational behavior, and other traditional functional areas, but coverage is integrated within the context of each module while addressing complex and interrelated business problems throughout the first year.

Teams of five students are also assigned to area corporations to complete a series

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Teams of five students are also assigned to area corporations to complete a series
A summary of the first year, continued

of projects and assignments. These “mentor company” experiences provide an opportunity for students to further develop and apply their teamwork and problem-solving skills within the corporate environment. Teams work directly with executives to react to business challenges and take advantage of opportunities. During the year, students complete three projects for their mentor companies:

1. During Module II, the groups prepare a financial analysis and a competitor analysis.
2. During Modules III and IV, the teams evaluate an internal system of the mentor company’s choice and identify its “fit” with the company’s strategic objectives.
3. The students then recommend the design or redesign of a delivery system.

The four modules in the first year of the program are detailed below.

Module I: Creative Management in Dynamic Organizations

The first module is an introduction that encourages students to develop new ways of thinking about managerial behavior. Students explore leadership, ethics, innovation, and creative problem solving. Individually and in groups, students apply these standards to managerial problems. Work in this module strengthens business skills in computers, written and oral communication, economics and mathematics. Through activities ranging from outdoor team-building exercises to assisting with a community-based project, Module I lays the intellectual and motivational foundations for the Babson MBA.

Module II: Assessing Business Opportunities

The second module introduces students to the analytical tools necessary to master industry analysis and assess a company’s competitive position. Through the understanding of market segmentation, product positioning, pricing, and financial data analysis, students see the differences among types of organizations, from entrepreneurial start-ups to multinational corporations. In this module, students are assigned exercises to be completed in conjunction with their business mentor company.

Module III: Designing and Managing the Delivery System

The third module builds upon the preceding theme of opportunity assessment and focuses on the integration of operations, accounting, financial, marketing and organizational systems within an organization that are consistent with the chosen strategy. In this module, students develop the skills needed to design and manage the system that turns an opportunity into reality. The classes examine the ability of existing and new delivery systems to support company strategy. Students also look at processes from an operations perspective: How they work, how much they cost, and how they
Module III: Designing and Managing the Delivery System, continued

affect customer value. As an important component of this module, students recommend the design or redesign of a delivery system to their business mentor company.

Two themes help create cross-functional cohesion in this module:
1. Presenting Total Quality as the driver of competitive advantage emphasizes how all areas of the business contribute to high-quality products and services.
2. Strategic Fit stresses the critical importance of making every element of the delivery system consistent with the strategy of the organization and with each other.

Module IV: Growing and Renewing Businesses

The fourth and final module reinforces concepts from previous modules and introduces concepts needed to manage effectively in the short and long term. Managing for effectiveness requires that leaders be aware of, adjust for, and anticipate changing competitive conditions. This module takes a broad perspective of the range of forces that might impinge on the business, and helps students develop skills to diagnose, plan, and implement management activities. Students assess management of large and small organizations under conditions of growth or adversity, examine internal and external forces driving change, develop a complex set of strategies to lead an adaptive organization, and evaluate the operation of global enterprises.

The Second Year Curriculum

The second year of the new MBA program builds on the student’s integrated exposure to management education to develop expertise in a specific area by focusing on an elective concentration. Included in the second year is a required cross-cultural experience, where students participate in an overseas internship, choose a semester abroad, or complete a three-week “International Elective.” In addition to the cross-cultural requirement, there is also a full-year course on global strategy, which includes a computer simulation game that parallels the course work.

During the second year of the program, students complete a schedule that is equivalent to 10 courses (30 credit hours), building on the first-year experience and allowing focused elective study. Students take nine elective courses, up to six of which may be in one discipline, and either one 3 credit or two 1.5 credit capstone courses in entrepreneurship, global business environment, strategy, and global strategy.

Second year is more focused

Olin Hall: A new home for the graduate program

The Facility

Olin Hall, the new facility for the Graduate School of Business, was conceived to support the two-year MBA curriculum. To facilitate the Mentor Program, 25 team
Olin Hall: A new home for the graduate program, continued

rooms in Olin Hall all provide dedicated space for up to eight students per room. The Mentor Rooms are just like business offices with telephones, PCs, power and data connections for notebook PCs, and lockers for personal items. Olin Hall also offers eight computer-equipped group study rooms. Similar in design and equipment, the study rooms are ideal for collaborative teamwork involving second year and evening students.

Computer capability and sophisticated audiovisual equipment are installed throughout the facility, including all classrooms, and the auditorium, and may be moved easily to any interactive classroom. We have video cameras that automatically track on microphones used by speakers at the lectern and in the audience, which enables videoconferencing and recording of class proceedings, and affords a future tool for distance learning. The computer lab accommodates up to 60 students. Terminals are connected to the lab's teaching station, and to video-projector equipment for presentations, and to GlobeNet.

**Change #2 — Undergraduate Curriculum Reform**

Three years ago, the Undergraduate Decision-Making Body (DMB) responded to feedback from faculty, alumni, students and employers. The DMB, an elected committee that holds primary responsibility for the undergraduate curriculum, concluded that the undergraduate curriculum should be strengthened in three ways: (1) increased emphasis on field-based learning, (2) appropriately integrated subjects and disciplines, and (3) a flexible curriculum that supports the individual learning needs of our students.

The DMB decided that to be able to bring more flexibility into the curriculum they would focus on core competencies expected to be developed in all Babson students. In April of 1994, a core competency task force recommended the adoption of 25 high-level competencies to be used as a guide for further curriculum development. Those competencies were generally discussed by the faculty and on January 31, 1995, the DMB formally ratified them as a working list to be used as a tool for further curriculum development.

Consistent with the move to a competency-based model is the recognition that the curriculum must be more than an ordering of subject matter, it also needs to take into account the student's development as a learner. The curriculum should give the student the ability to revisit, at increasing levels of sophistication, the competencies delivered within the core of the program. The collection and dissemination of assessment data will play a crucial role. Assessment in a competency-based curriculum is primarily aimed at judging a final level of achievement. Assessment should give students the ability
Partnering of student development, continued

to understand their strengths and weaknesses, and therefore should give them the ability to craft individual learning plans to accomplish their personal educational and career objectives.

Three levels for undergraduate curriculum

The new undergraduate curriculum, which was phased in beginning Fall 1996, consists of three tiers or levels: foundation, intermediate, and advanced. The purpose of three tiers is to give the student the opportunity to spiral through the competencies at three different developmental plateaus.

Students develop their own long range plan

The cornerstone of the proposed program is that each student is given both the opportunity and the responsibility to develop a coherent plan of study that supports long-term objectives. The program springs from a highly structured foundation and unfolds into a highly individualistic advanced level. Throughout the program, the student will devise and revise a course of study with the advice and consent of a faculty mentor. The three levels of development are outlined below.

Foundation Level

The foundation level provides each student with a basic appreciation for the various areas of study in which it is possible to develop depth in the curriculum. Students are expected to design their own program of study in consultation with their faculty advisor. Courses offered at the foundation level include general education as well as business disciplines, and range from Statistics and Rhetoric to the Freshman Management Experience and Science.

Intermediate Level

The intermediate level both broadens and deepens the competencies established at the foundation level. Students are expected to begin the Intermediate Program by enrolling in the Integrated Management Core (IMC). The intermediate level provides an integrated and coordinated study of the business core and provides opportunities for more depth in general education areas.

Advanced Level

The advanced level represents the program of study where students are given wide latitude to craft a set of competencies to support their own individual life plans. The Advanced Level is intended to be a self-designed individual course of study incorporating some minimal structural elements. The advanced curriculum will also involve a combination of general education and business areas.
Assessing data and setting strategic goals

Once the assessment plan for student competencies has been implemented, we can use summaries of the student assessment data as a measure of student learning and to set strategic goals for the college. In addition, the assessment data provides evidence of the “value-added” of a Babson education.

Change #3 — Reengineering Student-Based Administrative Processes

The College faces numerous challenges as we strive to achieve our educational mission of becoming an international leader in management education. Employee data and input indicated a significant amount of unproductive time (i.e., keying in data that already existed on another [incompatible] system). Students were dissatisfied with numerous administrative processes (i.e., registration and billing). In response, we have initiated a major reengineering project focused on student-based administrative services. The purpose of this project is to reduce, streamline, and simplify the administrative operations of the institution. Reengineering will focus on the delivery of high quality services to our customers through the efforts of cross-functional, self-directed teams, and responsive, easy-to-use, information systems and technologies.

Cutting costs while improving service

The reengineering project includes all of those services that complement classroom academic experiences, including admissions, financial aid, registration, student billing, student loans administration, academic planning, field-based learning administration, and career services. The basic goal of reengineering is to reduce the structural costs of College operations and find ways to redirect those resources to academic programs, and to effectively and efficiently deliver a wide range of quality support services to our student population.

Fundamental elements of reengineering

Fundamental elements for process reengineering include redesigning processes to be focused on the student while providing services that are easy to access and include a single point of service. We are also focused on meeting customer requirements through a process orientation (developing administrative services that are student based rather than functionally based).

Five areas of focus

The reengineering project focused on five areas, including:

• Advocacy. This will provide a single point of service for students through the integration of academic and administrative advisement services.
Five areas of focus, continued

- Student Financial Services. Through the development of a student financial services information system, all student financial services will be integrated, including student billing, financial aid, student payroll, and student loan collections.

- Academic Records and Registration. This involves the integration of the undergraduate and graduate registrars, and includes the development of a student information system, an on-line registration system, an on-line grading system, an electronic catalog, and academic planning systems.

- Field-based Learning and Career Services. This involves the design of seamless processes and a single point of service for corporate customers and students. This includes domestic and international internships, projects, and career placement.

- Admissions. This involves the design of an electronic inquiry and application process with central handling of production and logistics.

Human Resource Changes

Taking action to improve Human Resources

A number of actions have been undertaken to modify human resource practices and policies in order to better align our HR systems with the new culture. These include:

- Competency-based HR systems. Competencies were developed by conducting critical incidents interviews of key performers throughout the college. The Transition Team at the college worked with a consulting firm to develop a list of behavioral indicators that identified characteristics of top performers. These were then used to determine the “core” competencies that would be expected of all employees, and “domain” competencies that are required to effectively perform the work. Training was then designed to help others develop these skills and abilities. At this time, we are testing compensation plans that are linked to competencies. We are also piloting training on the critical incidents interview process in selected areas of the hiring process.

- Training and development initiatives. Targeted areas for training and development came out of the competency model. The initial focus is on reengineering teams. From interviews with team leaders, themes emerged on priority areas for training. A custom training agenda was designed for each team by the training coordinator assigned to the team in coordination with the team leader. Although funds have been allocated to bring in external training experts if needed, the
Taking action to improve Human Resources, continued

intent is to utilize internal resources (e.g., faculty) wherever possible in order to minimize costs.

• Pilots for performance appraisal. Six work groups and teams on campus have volunteered to pilot an electronic tool for competency-based performance appraisal. Each individual on the team (or in the work group) selected 4-5 people (e.g., other team members or customers) to rate them on elements of the competency model and provide feedback. This information was compiled and shared with team leaders. The data was also used as input for determination of training and development needs.

• Change management workshops. This workshop was designed to help individuals understand the forces of change, the human impact, and how to more effectively cope with and manage change.

• Custom-designed training and development opportunities. Based on the needs of specific teams and workgroups, a number of custom-designed training and development initiatives have been conducted. This includes:

  - a customized feedback module for teams,
  - a team-building exercise for one of the reengineering teams, and
  - brief (15-30 minute) technology “flash” sessions for software applications.

Future Innovation

There are three major areas we are developing for the future. We have a long way to go, but the following is a short description of what we are still working on:

• Implementation of key performance measures. We are currently in the process of finalizing a set of key performance measures for the college. The purpose of these measures is threefold: (1) to improve strategic management of the college, (2) to facilitate alignment throughout the organization, and (3) to provide a more comprehensive and integrated basis for decision making. These institutional-level key measures will aggregate and integrate multiple data to highlight the most important elements for review and decision making at the senior management level of the college.

• Redesign of performance management system. At this time we are piloting a competency-based multisource evaluation system, which is more developmentally focused than the current system. In addition,
Three innovative projects for the future, continued

new awards are being piloted. Three times a year employees will nominate individuals to receive an award for teamwork, creative problem-solving, or customer service. These will be presented at a town meeting, where the individuals receive public recognition and a small monetary award.

- Productivity in delivering learning or enhanced learning. We are redesigning curriculum to be more integrated, therefore removing unnecessary information redundancy. In addition, we are creating a stronger interaction between students, faculty and staff. For example, at the undergraduate level, administrative, faculty and student teams are responsible for “The Freshman Year Experience” (FYE), a program designed for all first year students that helps to bridge the academic and co-curricular lives of students as well as support students through the adjustment to college life.

Conclusion

We have much yet to do. However, we have a clear vision of what we want to be. We have clear goals and objectives. We have listened to our customers and made revolutionary changes in academic programs, administrative services and work systems. We are doing our best to redesign our organization for the 21st century and prepare our students for the work environment of the new millennium.

Author information

William Glavin became President of Babson College in 1989, following a 34-year career with Xerox Corporation and IBM. He joined Xerox in 1970 as the Executive Vice President, and in 1974 moved to London, England where he became Managing Director and Chief Operating Officer of Rank Xerox. He presided over that organization’s most significant volume and earnings increases in its history. After six years with Rank Xerox, Bill returned to the U.S., became President of the Business Equipment Group, then was named Vice Chair in 1985. Before joining Xerox, Bill held a number of executive positions with IBM. He received his bachelor’s degree from The College of the Holy Cross, his MBA in Industrial Management from the Wharton School of the University of Pennsylvania, and was presented the honorary Doctor of Law degree by Holy Cross. He serves as a board member for INCO Limited, Reebok International Ltd., Caldor’s Inc. and John Hancock, Mutual Funds, Inc.
If You’re Not Growing, You’re Dying!

Ronald Turner, President and CEO, Computing Devices International, a Ceridian Company, Minneapolis, Minnesota

During an address to the Canadian Association of Chiefs of Police, Sir David McNee, who heads the London Metropolitan Police Force, told this parody of a policy examination question. He said, “You are on patrol when an explosion occurs on the next street. Upon investigation you find a large hole, and an overturned van lying nearby. Inside the van, there’s a strong smell of alcohol. Both occupants, a man and a woman, are injured. You recognize them both—you know that the man is an unlicensed driver and the passenger is the wife of your boss. A motorist stops to offer assistance, and you recognize him as a felon wanted for armed robbery. Suddenly another man runs out of the house nearby, shouting that his wife is expecting a baby and the shock of the explosion has made birth imminent. At the same time, you hear someone crying for help, having been blown into an adjacent canal—he cannot swim. End of the question. Describe in a few words what you would do.”

Sir David said that one of his brightest young officers, after having thought of the situation for a few moments, picked up his pen and wrote, “Remove uniform and mingle with the crowd!”

Sometimes, when confronted with turbulence, we come face to face with the fundamental question: Do we remove our uniforms and mingle with the crowd, or do we stand up and take on the challenge? Nobody is immune. Every organization faces major foundation-shaking turbulence at one time or another.

Computing Devices International and its parent, The Ceridian Corporation (formerly Control Data Corporation), first encountered this kind of turbulence over a decade ago. Now, the story I’m going to tell you is about coming face to face with the unthinkable and emerging only through commitment to basics—especially Total Quality. This story is about the lessons we’ve learned, and I hope that you will find them applicable to your situation.

Control Data Corporation was founded in the 1950s and grew rapidly. It was a world leader in the computer revolution. In the 1980s, a combination of business and economic circumstances resulted in a series of financial losses that took the company...
Control Data Corporation: The early years, continued

from 61,000 employees down to 10,000. It lost its reputation as a model corporation with innovation in products and technology. Instead of funding growth in its strong business, it diversified into a very large number of unrelated markets. In its core computer business, growth stopped, complacency developed, and management missed virtually all the key developments that transformed the computer industry in the 1980s. Many other corporations went through the same trauma during that decade.

Hitting the bottom, and beginning a renewal

After several years of huge losses and a net operating income loss of $1.5 billion, management’s first priority was to restore financial stability. Many business units were just sold or closed.

By 1992, financial performance had improved sufficiently to begin a strategic renewal. The decision was made to completely reshape the company. The new name, Ceridian, enabled the company to establish a distinct identity and restart the engines of growth in its information services and defense electronics business.

Some early results of success

It has worked. Ceridian’s market capitalization, which is a share price times a number of outstanding shares, has increased from $300 million to over $4 billion. Common share price has increased from $5 to about $50 per share. Growth in revenue and profit is in the double digits, and operating margins have improved from 7.6% in 1992 to 13.4% in 1996. Stockholder equity has grown and is now healthy, and Ceridian is in a very strong cash position. We traded a multiple of over 22 in the New York Stock Exchange, so at least from a financial perspective, success has resulted.

A background description of the company today

Let me give you a brief background on Ceridian. I am the CEO of the defense electronics business, Computing Devices International. We represent 38% of the revenue; the remaining 62% comes from information services. We’re a leading provider of human resources outsourcing, and we’re number two in payroll processing. We are the number one provider of marketing and rating services for the radio market via our Arbitron unit. We’re the number one supplier of data and information services in the trucking and gaming industries.

Computing Devices is almost exclusively a defense electronics business. It has operations in the U.S., mostly in Minneapolis. We are now Canada’s largest defense contractor with stand-alone operations in Ottawa and Calgary. We also have a major facility in England.

Some current projects

Computing Devices has produced more airborne computers for the military than any other company. We just delivered our 9,000th unit of one particular product, with over 20 years of production for all U.S. Navy Fighter Aircraft. We are in the process of
Some current projects, continued

completely upgrading the Canadian Army’s command, control and communications system, including 20,000 radios and 3 million lines of software code. We are also the second largest provider of avionics in the new European fighter aircraft, providing the main computers, stores management systems, direct voice interface, and several other subsystems.

Changes over the last four years

I’d like to devote the remainder of this article to discussing what has been done at Computing Devices International over the past four years to cope with marketplace turbulence.

A look at the defense industry

At the same time that Ceridian and Control Data were reforming, the aerospace and defense electronics industry was also going through radical changes. The industry has been characterized by federal budget declines, mergers, acquisitions, and procurement process changes. And the changes are not over.

The overall U.S. defense budget has been cut by about a third since it peaked in 1986. While this may sound drastic, it gets worse. The procurement portion of the defense budget—which, of course, funds our company—is down nearly 70%. That’s a serious decline in our market.

Aging equipment

Now this is also having a profound impact on our sailors, soldiers, and aviators. If you project this investment curve into the future, the average life of equipment in the U.S. inventory will soon exceed 50 years. Some elements will be older. Ships will, on average, achieve an age of 70 years. The story is already evident on some fronts. In September of 1996, the United States decided to launch some cruise missiles at targets in Iraq for violation of a no-fly zone. Four bombers and 14 tankers flew out of Louisiana and Spokane to make that drop. One of the tankers was flown by a crew member who was born eight years after the tanker was manufactured. This is disconcerting to me because the half-life of technology is between 18 months and 5 years.

The implications of budget cutbacks

Technology was a major reason for success in Desert Storm, yet the electronics piece of the defense budget is down 60%. In the future it will be a flat market at best, and I’m convinced it’s going down. Few people understand the extent of the crisis that the defense industry has faced and will continue to face. With the market in rapid but predictable decline, competition has stiffened. Mergers and acquisitions have been in the headlines for the past few years, and that will continue. The large prime contractors are defending their margins by absorbing subcontractors and taking in previously subcontracted work.
Some commentary about the changes

The result is fierce competition. Former Defense Secretary William Perry warned that he expects defense companies to go out of business, and the Defense Department will stand by and watch it happen. Booz Allen predicts that 80 of the top 100 defense contractors will disappear by the year 2000. Norm Augustine, the present CEO of Lockheed Martin, said recently, “This is a period of tectonic change for America’s aerospace industry. But in today’s world there are only two kinds of companies, those that are changing and those that are going out of business.”

How do you react?

Computing Devices is among those companies that are changing. It is changing not only what it does, but how it does it. Now, if you were caught in this kind of market, what would you do? Things have been pretty exciting, as I’ve indicated. There are a lot of revenue-hungry firms out there that are on the brink. They are somewhat like cross-eyed discus throwers—they may not win many medals, but they sure keep the crowd on its toes.

Embracing Total Quality

Basic economics says that to survive in a declining market you must be among the most efficient. Our quality program, first and foremost, addresses efficiency and productivity—lowering costs head on.

Defining Quality

This calls attention to one of the biggest issues of making a quality program a success: Definition. Many companies, including Computing Devices, are struggling to provide employees with a precise definition of what quality means and why is it important to the business. Sometimes it’s easier to define what something is by getting a better understanding of what it is not.

What Quality is not

Quality is not optional! It is not someone else’s job, or an extra task. Quality is not a barrier. It is certainly not an inspection. It is not a function, and it is not checking off boxes. Quality is not a manufacturing problem, a vice president’s problem, or a manager’s problem. It is not magic, science, or a textbook, and above all, it is not a collection of buzz words, or the latest hype from the latest management books. So, if quality is not all of these things, what is it?

What Quality is

Quality is change, and lots of it! Quality is a mind-set, a culture, an operating philosophy, and above all, an attitude. Quality is “do-it-right-the-first-time” thinking that has to be second nature to all employees in every single element of the business. Quality is discipline, and ensuring that commitments are met. Quality is doing what makes good sense. It does not inhibit, rather it encourages creativity, innovation, and
**What Quality is, continued**

Diversity. Quality means improving your customers' world, creating new business, and working smarter. Quality is teamwork; it is everyone's responsibility; and it is necessary and imperative for survival.

**Quality has evolved**

The best companies today are practicing quality in a much broader sense than the narrow interpretations of the past. Quite simply, quality means doing things right, and only doing the right things, every time, all the time. The key components are consistency and constancy of purpose.

**Moving beyond the obvious**

This means going beyond the obvious to improve quality. There was a misconception among some people that customer satisfaction could be achieved by simply reducing defects and eliminating complaints. We know that quality means much more than that today.

**A continuous journey**

Despite the progress we have made, we are not finished. In fact, we will never be finished. We are on a mission of continuous improvement. Quality is truly a continuous journey with no finish line.

**Return to basics: invest in training for our employees**

Becoming a quality driven company that involves all employees does not happen overnight—it is a long term proposition. But we are seeing some very encouraging results. One of the first things we did to initiate change at Computing Devices was to return to basics. We invested heavily in training for our employees, and deployed various processing tools. We wanted to instill an idea that quality means every day, not just today, and not just for the future. Training is a very integral part of our journey. We focused on becoming a process driven organization.

**A new challenge: Six Sigma**

By 1994, we had made a major step and initiated Six Sigma as the path to pursuing our productivity improvement. All Computing Devices employees have been trained in Six Sigma methodology. We have also trained many of our suppliers and customers so they could relate to what we were doing and why we were doing it. Today, Six Sigma is helping Computing Devices achieve new levels of customer satisfaction and enabling it to become more competitive in the global marketplace.

**“The end of the beginning”**

Though I believe we have come a long way on our journey in Six Sigma, we still have a long way to go. As Winston Churchill said, “This is not the end, it's not even the beginning of the end, it might however be said, it's the end of the beginning.”
## Winning some awards

We've made a lot of progress and we are seeing some very encouraging results. All the manufacturing sites in the U.S., Canada, and the U.K. have ISO 9000 certification. Last year U.S. operations won the Minnesota Quality Award, and for the last two years Computing Devices has been in the final 22 for the Baldrige Award. We have been recognized by many major suppliers, including McDonnell Douglas, and British Aerospace.

## The learnings are most valuable

However, it is not the awards themselves that are valuable. It is the learning that results from going through the application process and analyzing the examination feedback. These milestones are great check points to measure how far we've come on the path to becoming a Six Sigma company.

## Encouraging financial results

Computing Devices' financial results have also been very encouraging. Over the past four years, even in this deplorable market, the business has grown at a 12% compound growth rate without acquisitions. Significantly, operating margins have doubled. But even more importantly, productivity initiatives have resulted in revenue per employee growing from $120,000 in 1992 to $185,000 this year. During the same period we have more than doubled R&D, capital spending, and training budgets.

## Growth is needed, not just efficiency and cost-cutting

We have learned that being efficient is essential. But I will assure you that it is not enough to ensure survival. No one can reduce costs forever. As I've said, in order to have a future you must grow. How do companies grow? They get more revenue. And they get more revenue by having products that others want to buy. You cannot stay at the same revenue and survive. You are either growing, or you're dying.

## Description of a dead company

Inflationary pressures constantly eat at you from the bottom. Layoffs, a lack of funding for research, an absence of opportunity for new products, limited chances for individual growth—these are all characteristics of an environment that is just not any fun. Organizations that are in this mode are dead. They just haven't made an announcement yet.

## Computing Devices is growing and transitioning

Now Computing Devices is not going to be among them. We have identified some great new commercial markets for our products and our technology. We are transitioning from being a defense electronics company to becoming an electronic information management company, serving more of the world than just the government sector.

## A three-year process of building infrastructure

We have sown the seed for growth over the past three years. New business and productivity are very closely related. In fact, from my perspective, they are intrinsically
If You're Not Growing, You're Dying!

If you're not growing, you're dying! Improved productivity and total quality lead to lower cost, lower prices, improved delivery performance, fewer operational failures, fewer returns, and are in fact enabling new business to occur.

In this fiercely competitive world, you can't expect to keep your existing customers, much less get new ones, if you can't satisfy these basics. In the past, total quality was a discriminator. In the future quality will be absolutely essential and necessary for existence.

With this in mind, even with efficiency in cost cutting, we still need to attract customers that want to buy our products. We must increase revenue in order to grow and optimize the future. Innovation is the only way. The companies that succeed in the future will be the innovators. They create organizations with creative people who listen to the marketplace, the voice of the customer, and learn from the world around them. They will be the companies that use the acquired knowledge, not only to create new products and services, but to create business processes and ways of doing business that make them quick and efficient.

You must accomplish real breakthroughs, not just settle for whatever results you might get. Your resolve must be unwavering. The organization will constantly challenge your commitment. The leadership cannot afford to blink, not even once! Let me sum up four points that explain what quality means at Computing Devices International. Perhaps you'll find something that strikes a chord in your organization.

First, it means totally understanding customer requirements. Customers continue looking for total satisfaction of their needs the first time and every time they use a product or service. To achieve that level we must truly know the customer; we must anticipate their needs and understand their problems better than they. How else can you create solutions?

Second, quality means adopting a team concept. We know that a single individual can't achieve quality alone, and no one can make quality improvements alone. Team building is one of the most important aspects of quality improvement efforts. Teams are a way to achieve business goals, and teams are a way to accomplish work. When you are working and learning with a great team, the synergy is obvious, and it's also very powerful. It's even fun on occasion. Cross-functional teams are especially advantageous because they involve individuals with different perspectives. When teamwork is the destination, victory happens all along the way.

Quality means having a total team concept
Quality means eliminating waste and understanding processes

Third, quality means doing the job right the first time, every time, and all of the time. We need to have a balance of passion and process. Passion sets the direction and provides the leadership. Process provides the tools, the structure, and the mechanics. We know that by understanding our processes we are learning how to do the job right, and how to do the right job. We have to aggressively drive out the waste in all of our processes. We have to address the strategic side as well, that is to innovate, to introduce new products and services that solve the customer side of the equation. Quality management is certainly the preferred route to growing our business. No one wants to do things wrong, or to have to rework their efforts. Doing things right simply makes sense, and the results are higher productivity and improved cycle time.

Quality means continuous improvement

Fourth, quality means striving for continuous improvement. Always looking for a better way, a more efficient, more productive way. Quality is a moving target, driven by customer expectations, technology gains, and competitive forces. To keep that competitive edge, to keep customers totally satisfied and delighted, we must always pursue ways to improve. This is where the breakthroughs often occur. And don’t forget the people side. We must keep the support, reward, and recognition system in alignment with continuous improvement, innovation, and breakthroughs. Again, pursuing quality is not an option. Quality is necessary and imperative for survival.

Change is constant

The only given, the only constant, the only sure bet in your future and in mine, is change. Change has no conscience; it doesn’t play favorites; it takes no prisoners; and it ruthlessly destroys organizations with cultures that will not adapt. Just look around. In the past we had more time to respond. Change didn’t happen as fast. The competition wasn’t as stiff, and the customer wasn’t as demanding. We had time to breathe and collect our wits—but no longer. Now we have to improve faster, better, and more than our competition. Let me share some ideas on how to make that happen in your organization.

How to be successful in the midst of change

Ask your people for their help! Allow them to take the initiative. Self-directed behavior and self-sufficiency are essential in today’s world of accelerating change. Let your people put themselves in charge of problem solving and encourage them to show initiative. Remember, no statue has ever been erected in the memory of a person who let well enough alone. Inertia is more crippling than a mistake. An inaction is more costly than an error. Give them the freedom to learn from their mistakes and plow on. Empower them to energize the organization and build momentum. The old ways of doing things have to go! The secret is to simplify. Look for shortcuts without sacrificing standards or ethics. Tradition and old procedures have to be challenged.

Need to take risks

Did you ever wonder why people and organizations don’t get braver as they get older? The answer is: they need to take risks!
Need to take risks, continued

older? Kids handle change much better than adults. Adults bog down in habit routine. Kids demand variety. They explore and welcome the unexpected. They look at an unpredictable future with curiosity rather than worry. They're willing to fall to learn to walk. They're willing to fumble to figure out what works best. The most damaging phrase in our language is, “It's always been done that way.” Use your imagination, try some wild ideas, take risks, and remember—you miss 100% of the shots you never take.

Must embrace changes, not simply react to them

Defending the past cannot protect you from the future. Change is inevitable, but progress is not. You may not want to change, most of us don't, but it's here. Very few are big enough to stop it or even alter it. The question is, are you going to manage it? Learn from it? React to it? Or be run over by it? Do you want to grow? Or do you want to stagnate? Organizations can't go fast if their employees go slow. Rapid change calls for rapid response. You have to push to change process. You have to add value. And you have to create a high speed organization.

From the management book Sacred Cows Make the Best Burgers, the authors make the distinction between change and reacting to change: “Good individuals in organizations react quickly to change; however, great individuals in organizations create change.” Make change your ally, not your enemy.

Conclusion

Turbulence forces an organization to take a hard look at itself and come to grips with the most fundamental questions of all: Whether to fight or flee? Whether to commit to discipline, a total quality orientation, and to stretch goals that will grow the business or resolving to dissolve the company. From my perspective the choices are that simple. If you're not growing, you're dying!

Author information

Computing Devices International conceptualizes, designs, develops, manufactures, and integrates electronic information systems and subsystems for chosen defense and civil government markets worldwide.

Mr. Turner was President and Chief Executive Officer of Ceridian Corporation's Computing Devices International business and Executive Vice President of Ceridian Corporation when this paper was delivered. He has since been promoted to the Company's executive office as Executive Vice President, Operations, where he focuses on day-to-day operations management for Ceridian Corporation.

Prior to joining Computing Devices International in 1993, Mr. Turner was President and CEO of GEC-Marconi Electronics Systems Corporation. He also held several executive positions at Martin Marietta between 1973 and 1987. He was a captain in the U.S. Air Force from 1968-1973. Mr. Turner holds a bachelor's degree in aerospace engineering from the University of Tennessee, a master's degree in engineering from the University of Florida, and a master's degree from the Massachusetts Institute of Technology's Sloan School of Management where he was a Sloan Fellow.
From the Science of Complexity 
To Leading in Uncertain Times

Curt Lindberg, Senior Consultant, Complexity Management, VHA Inc., Cranbury, New Jersey 
James Taylor, President & CEO, University of Louisville Hospital, Louisville, Kentucky

In these unsettled times, health care executives need new organizational and leadership perspectives and competencies to effectively create and develop integrated health networks and operate health care organizations. Yet, we often find the existing leadership knowledge base and organizational theory insufficient. In addition, it seems that the very skill sets that today’s leaders possess, and the success of their application in the past, blind us to the imperative for developing new organizational capabilities and insights in a time of great change and new challenges. These challenges, which are not unlike those faced in many other business and governmental sectors, include:

- Simultaneously shrinking hospital inpatient capacity and significantly reducing costs while experimenting with new approaches to the delivery and organization of health care
- Building health care systems from previously independent components and helping them work together
- Coordinating the care of patients within newly formed health care systems
- Uncovering new approaches to improving the health of communities
- Linking with physicians and other health care professionals in new ways and sharing power and control in a collaborative setting
- Creating organizations that adapt more readily

Recognizing these challenges, VHA of New Jersey, a regional alliance of 19 community hospitals, established a goal in 1995 to identify new leadership and organizational competencies which could contribute to the future viability and success of health care organizations. A Leadership Development Task Force, composed of 15 CEOs, nursing executives, physician leaders and VHA staff, was constituted to search for promising new ideas, determine their relevance for health care organizations, test these ideas on real issues, and share the findings with all VHA of New Jersey members.

As this search progressed, Task Force members began to sense that knowledge
Learning from science, continued

arising from a variety of fields—physics, evolutionary biology, computer science, economics—is leading to new insights into human organizations and the management of them. Much of this knowledge is embodied in the emerging science of complexity, the study of complex adaptive systems (CAS). This article presents an introduction to some important concepts of complexity, explores the implications of these concepts for organizational leadership and offers some suggestions on where to go to learn more.

An introduction to complex adaptive systems

A complex adaptive system is a network of interacting agents. Think of an agent as a member of a family, a neuron in your brain, an employee in an organization, a hospital in a local health care system, or an ant in an ant colony. CAS have multiple agents that interact continuously among themselves and with the environment. Such systems embody several characteristics:

• Behavior of agents in these systems is described or determined by rules (Holland, 1995, p. 10). A rule in an organization could be a policy. It could be a theory of how the organization functions. It could be the history or culture of an organization that guides and influences how the agents work and act.

• The agents are continually learning and changing their rules and behavior (which is why they are called complex adaptive systems) as they gain experience and react to actions of other agents.

• Because agents are continually adapting and interacting inside the organization or system, and with the environment, complexity scientists point out that the interactions are non-linear. This means that the results of the interactions are not the sum of preceding interactions, but are more complicated and unpredictable than the sum of the behaviors of the individual agents.

• Complex adaptive systems that are healthy and creative operate in a zone between order and disorder, exhibiting the right mix of internal stability and instability. Life is at the edge of chaos. Complexity scientist Stuart Kauffman says: “To engage in the Darwinian saga, a living system must first strike an internal compromise between malleability and stability. To survive in a variable environment, it must be stable, to be sure, but not so stable that it remains forever static” (1995, p. 73).

The modern environment requires a management that is not conventional

These characteristics add up to an important conclusion: complex systems cannot be centrally designed and controlled. The traditional Newtonian cause and effect approach to examining systems, organizations and their components will not allow one to predict how systems will work, or to detail new ones. Complex adaptive systems are not mechanistic, they are organic. The long-term future of such systems is said to be unknowable. This all suggests that the job of the leader is not to direct the system in the traditional sense, but instead to help create the conditions in which creativity, innovation, and adaptability can emerge.
We need to test new theories while continuing to use old ones

Does this mean that our conventional thinking about management and organizations must be totally discarded and replaced with a complexity-oriented management approach? Our answer is no. Ralph Stacey, a management professor who has done much to bring complexity principles into organizational thinking, suggests that both approaches are essential (1996b, p.47). To illustrate this point he has developed an illuminating two-dimensional matrix, juxtaposing the degree of certainty on one axis and the degree of agreement on the other (see Figure 1).

**Figure 1. Agreement and Certainty Matrix A**

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Stacey suggests that traditional management works very well when we find ourselves in the lower left hand corner, where there is a high degree of certainty and agreement. That is when the environment is relatively stable or when the time horizon is short, and where people easily reach agreement around a rational plan of action and develop objectives and measures to guide its implementation. If the plan gets off course, one can simply identify what is required to bring it back under control.

We limit ourselves if we only resort to what we have been taught

Increasingly, the issues important to our organizations’ futures do not occupy this space. The environment is unstable. The time horizon reaches beyond the short-term. We cannot predict the future with any confidence. As leaders, we often can’t agree on a strategy, a culture, or a set of values because the future is so indeterminate and change is so rapid. Nevertheless, when faced with these circumstances, most of us continue using management theories we have been taught and successfully employed during more stable times, believing that there are no viable alternatives. The only other option seems to be the abdication of leadership responsibility with the attendant risk of organizational disorder and disintegration.
An additional way

Complexity theory suggests there is an alternative—a third space, a middle ground between conventional rational management and stability, and total disorder and loss of control. This is the space of the question mark (see Figure 2), the zone of complexity on the edge of chaos. It suggests that conventional management, married to a complexity-inspired management approach—a paradoxical state—will give an organization the ability to deal with a greater range of circumstances on the agreement and certainty continuum. If indeed this is the case, the issue becomes how one can manage and lead from a complexity perspective and how one can couple this approach to more traditional management processes.

An examination of complexity science is beginning to yield some preliminary, tentative ideas and hypotheses. The Leadership Task Force’s reading, research and discussion have generated some new, promising leadership and organizational principles. These six principles will be changed and refined as more is learned, but they are presented here as expressive of the major concepts emanating simultaneously from a wide variety of fields.

**Six emerging and connected organizational and leadership principles**

**Principle One. When life is far from certain, lead with clockware and swarmware in tandem**

Science and technology journalist Kevin Kelly writes: “For jobs where supreme
control is demanded, good old clockware is the way to go. Where supreme adaptability is required, out of control swarmware is what you want” (1994, p.24). Clockware is defined as the management processes that are rational, planned, standardized, repeatable, controlled, measured, and efficient. This is appropriate when an organization operates in Stacey’s “close to agreement and certainty zone.” It is the world of the management we know. Swarmware is the process of exploring new possibilities, services and capabilities. It involves experimentation, trials, risk-taking, autonomy, freedom, intuition, and working at the edges of knowledge and experience. It is the world of complexity management, Stacey’s “middle zone.”

And since it is necessary for an organization to continue to provide its services and products in a reliable and consistent manner while exploring and testing new possibilities, and literally discovering a viable future for an organization, both sets of managerial skills must coexist. It is this paradoxical approach to management that complexity researchers suggest is creative and enables double-loop learning (Stacey, 1996a, p.177).

Principle Two. Tune your place to the edge by:
- Boosting the flow of information
- Fostering diversity and differences
- Increasing connectivity
- All while holding anxiety.

As noted earlier, the edge of chaos is the most creative place for a complex adaptive system. Complexity scientists have discovered that the rate of information flow within a complex system, the degree of diversity of the agents in a system, and the number of connections among the agents within the local system and larger system of which it is a part, are critical parameters which can be “tuned” to nudge a system to this creative space. And diversity, in this context, should not just be thought of along the cultural and ethnic vein, but along dimensions such as experience, values, perceptions, attitudes and background.

Ralph Stacey suggests that in human systems another important parameter should be considered: the level of anxiety within a system (1996a, pp. 177–183). If a human system can hold and work with a healthy level of anxiety (as opposed to avoiding anxiety or letting it reach a crippling level) and foster the right degree of diversity, information flow, and number of connections, a system is more likely to be self-reflective, creative and adaptive.

Principle Three. Go for multiple actions at the fringes; let direction emerge

Since the long-term future of a complex adaptive system is not predictable, a healthy system needs to be continually testing lots of new ideas at the fringes. Uncovering what services and activities are attractive to the larger system, or market, within
which the organization exists, and finding out what the system is actually capable of producing, is accomplished through such a strategy. So is identifying what Gareth Morgan calls the “negative feedback loops and defensive routines” (1997, p. 273), which sustain the status quo, or order within the system, and which, if appropriately modified, can lead to desired change. This constant probing and experimentation on multiple fronts is an example of an “on the edge” activity which can serve as a key creative strategy for an organization. Kevin Kelly puts it this way: “In heterogeneity is creation of the world. A uniform entity must adapt to the world by occasional earth-shattering revolutions— one of which is sure to kill it. A diverse, heterogeneous entity, on the other hand, can adapt in a thousand daily minirevolutions, staying in a state of permanent, but never fatal churning.... A healthy fringe speeds adaptation, increases resilience and almost always is the source of innovations” (1994, pp. 469-470).

This principle suggests that these fringe activities must be more than “thought experiments.” To really learn what is possible, ideas must be tested through action.

**Principle Four. Listen to the shadow system**

Ralph Stacey observes that while employees are always part of the formal organizational structure, or what he calls the legitimate system, they are also members of networks comprised of informal relationships of their choosing. He calls this the shadow system (see Figure 3). It is his contention that the locus of most creative ideas in an organization is in the shadow system. It is through the relationships within this system and the free-flowing of ideas, exploratory dialogue and reflection, that many new and innovative ideas arise (1996a, pp. 167–177). And since these relationships often extend beyond the boundaries of the organization, and overlap with shadow systems of other organizations, they can not only produce a wider set of new ideas but also new information and insights about the organization’s external environment.

**Figure 3. Network of Legitimate and Shadow Relationships**

Solid lines represent “legitimate” relationships; dotted lines are “shadow” relationships. (VHA Leadership Conference, April, 1996.)
When the shadow system is able to coexist in a healthy tension with the legitimate system, the conditions are ripe for the generation of innovative ideas. Their amplification, development, and potential adoption by the legitimate side of the organization, are dependent upon leaders who stay in touch with and listen to the shadow system.

Not only do leaders need to stay in contact with the shadow system, but they also need to concern themselves with the health of this system, as they would in the legitimate system. In an organization characterized by a high degree of trust, openness and respect for differences, the shadow system is more likely to be productive and contribute to the organization. If fear and an autocratic style of management are pervasive, the shadow system may become a source of resistance and purposefully sabotage the work of the formal organization.

These four principles have much to do with the creation of an organizational environment which is conducive to change, and where learning and adaptation are supported and understood to be key to the future. But what about direction when the future can't be foretold?

**Principle Five. Build a “good enough” vision**

The qualifier “good enough” is meant to convey the notion that a system or organization needs some sense of direction or directions, but nothing too precise or prescriptive. What a creative adaptive system needs is sufficient space and freedom to explore, not narrow boundaries or a perfectly clear, specific vision of the future which, as complexity teaches us, is likely to be wrong. “The principle of min specs (minimum specifications) suggests that managers should define no more than is absolutely necessary to launch a particular initiative or activity on its way” (Morgan, 1997, p. 114). In Stacey’s words: “If the future is inherently unknowable, it follows that a single, organization-wide ‘shared vision’ of a future state must be impossible to formulate unless we believe in mystical insight. Any such vision...is bound to be either a dangerous illusion or an interpretation of what has happened, made with the benefit of hindsight” (1992, pp. 13).

In another paradox, while this “good enough” vision, or min specs, must be embraced to serve its guiding function, leaders must also be ready to modify or drop it if the creative exploration it permits generates new insights or more viable alternatives.

If one believes that the concepts of complexity offer help in making better sense of one's organizational experiences and could contribute to one’s development as a leader, one will want to learn more. As you think about how to pursue a learning course we can suggest one min spec from our experience as members of the Leadership Development Task Force. It is Principle Six.
Six emerging and connected organizational and leadership principles, continued

Principle Six. Build a space—a community—to convey, concentrate, create and learn together

Find others to learn with you. Why not do as we did and form or join a learning network away from the legitimate system and routine work of your organization. Use the principles of complexity to help you think through how best to proceed. Real learning, we have come to understand, is not primarily a solitary effort but done best with other interested learners.

This general approach can help you overcome a central dilemma facing leaders today—overcoming the tight-grip conventional management. As Gareth Morgan writes, “One of the most basic problems of modern management is that the mechanical way of thinking is so ingrained in our everyday conceptions of organization that it is often very difficult to organize in any other way” (1997, p. 6).

The VHA of New Jersey Leadership Development Task Force was simply a group of senior executives, physician and nursing leaders, from the member hospitals, who formed a learning community around a common desire to uncover and understand advancements in management thinking and leadership. In a sense it was a shadow network, formed voluntarily outside the boundaries and agendas of the organizations they came from. It was a place where members could come to safely explore new ideas in the company of other learners.

The group convened every few months. We met with a wide range of complexity scientists and organizational theorists. We visited the University of Michigan and Santa Fe Institute (acknowledged centers of the science of complexity). Members shared what they were reading, thinking about and trying in their organizations. They explored the implications of what was being learned for important issues, like planning in times of uncertainty. In a very real sense the group sought to create edge of chaos conditions by rapidly seeking out new information and building multiple new connections.

Many on the Task Force would say that the diversity of the membership contributed to the richness of the exploration, and also the creation of a real sense of community. They would also say that the group helped them contain their anxiety as they confronted ideas which challenged their training in management, and their conceptions of their own roles as leaders.

As the knowledge base and confidence of the group grew, and word of the initiative spread, members invited others from their organization to join the Task Force. Ideas were shared with all VHA of New Jersey hospital executives. Introductory all-member conferences were held, and a national VHA Leadership Task Force was formed. Special sessions on complexity and leadership were added to VHA’s national leadership conferences, and an action research initiative was undertaken to explore the ideas in practice. In other words, the initiative has begun to find its way into the formal, legitimate system!
Personal reflections on the job of leadership

As we have learned from our experience with experts and our colleagues on the Leadership Task Force we have asked ourselves what this all means to us as leaders and the job we are asked to do in the complex adaptive systems in which we work. We don’t offer our thoughts as new complexity management principles, but simply some personal reflections on our leadership work.

Gareth Morgan and Ric Irving, management professors at York University, use a wonderful metaphor about the job of a farmer which captures the essence of our reflections: “Farmers don’t grow crops, they create conditions under which crops can grow (VHA Leadership Task Force meeting, November, 1996).”

In working to create those conditions, the farmer understands that he cannot control most of the variables that will determine how successful the growing season will be. Along the way he must act, learn, and adapt to what comes before him. Inability to act in the face of changing conditions will result in failure. Inability to learn from his actions will certainly yield failure in the future.

Farmers are people of optimism and hope. As they plant their crops they understand all that can happen and what they can and cannot do about the contingencies before them. And yet, each year they go about their work with the hope of success.

What our understanding of complexity has brought us is the same kind of hope. Hope because we now have a theory that has allowed us to make better sense of our experiences. As we do so, we have become more confident about our insight into organizations and the leadership job within them.

Complexity theory allows us to better define success. It is no longer achieving a preferred future, but rather successful movement in an understood direction. Organizationally, it isn’t the fulfillment of a detailed strategic plan, but rather continuous progress on a perpetually changing strategic agenda—learning, adapting, and improving along the way. Complexity theory has given us new insights for fostering this progress.

Individuals who have leadership jobs can again become hopeful about their role because complexity theory allows a realistic understanding of what one can contribute and therefore how to define expectations for oneself. Hope brings an inner calm that comes from the ability to balance anxiety about what an unknowable future may hold, and the excitement of finding out.

Just as the farmer looks over his newly planted field, we look over our organizational lives with hope and calmness, understanding more fully what we can do and what isn’t worth worrying about. As leaders, we know it is our job to help people find their own hope. Our understanding of complexity theory has helped us make sense of organizational experiences. As we have done so, we have been able to help others make sense of theirs. With this sense-making has come understanding, and with understanding has come hope.
Some suggested reading

A wide variety of writings is available on the science of complexity and a small but growing number of works are appearing on complexity in organizations. Some of the best from both of these categories and related areas are shown below. Many start their reading course with Complexity: The Emerging Science At The Edge of Order and Chaos by M. M. Waldrop and Out of Control: The New Biology of Machines, Social Systems, and the Economic World, by Kevin Kelly.


There are two worlds of business: The decreasing returns world is the processing of bulk goods (the “Halls of Production”) and products with little incorporated knowledge; The increasing returns business has to do with knowledge-based industry (the “Casino of Technology”) and interlinked webs of technologies. The author, one of the founders of the science of complexity, argues that different organizational orientations, skills, and approaches to planning are required for these two worlds.


This classic work was the first to suggest a guided mix of cooperative and competitive behavior. Puts forth the Tit-for-Tat strategy and establishes robust reciprocity as a key to long-term organizational viability. Don’t miss it!


Arie de Geus explores what nature can teach executives about narrowing the large gap “between the average and maximum life expectancies of the corporate species.” Argues for supporting ideas at the margins, giving people space and freedom to explore, building communities within organizations, fostering collaborative learning. A book by the same name, The Living Company, has just been published (1997 copyright) by the Harvard Business School Press, Boston, MA.


This is one of the few management books on the implications of complexity and nonlinear systems theory for the management of organizations. It is well done and offers up the self-organization approach to major change in contrast to more conventional approaches.

Some suggested reading, continued

Helix Books, Reading, M A.

Tom Petzinger annotation: “This book is pure science—no history, no flag-waving—but it is startlingly clear and thoughtfully concise at 172 pages. John Holland is the father of genetic algorithms...you'll find much more here that explains how systems adapt to both the nature and man-made world.”


Sound ideas for improving managerial performance under conditions of accelerating change. Weick's chapter “Organization Redesign as Improvisation” is a classic. “Downsizing and Redesigning Organizations” chapter by Cameron, Freeman and Mishra presents some of the first research results on downsizing and redesign. A number of the findings are consistent with complexity principles. This work should be on your ready reference shelf.


A fresh view of cycles of development and decline of organizations which goes beyond the S-curve concept. The authors, using the complexity framework, explore strategies for helping organizations adapt and remain relevant in light of the ecocycle metaphor.


Kevin Kelly annotation: “A very accessible summation of Kauffman's important major ideas, with nary an equation in it. Read this one first.”


Tom Petzinger annotation: “A bit daunting in spots, it goes further than other books in exploring what complexity theory might mean for the future of economics and organizations. And Kauffman's speculations on the origins of life are thrilling.”


This popular, insightful, and wide-ranging work pulls important new pattern-building findings from fields as diverse as computer science, biology, physics, and economics, relates them to the new worlds of complexity, chaos theory, and post-Darwin evolution, and suggests implications for complex organizations and systems of all types. Many of his findings are contrary to management traditions and practices.
From the Science of Complexity to Leading in Uncertain Times

Some suggested reading, continued


Strategy in the face of complex foresight horizons is an ongoing web of practices that interpret and construct the relationships that comprise the world in which the organization acts. Strategy and the future are discovered through generative relationships—those that produce unforeseen value and new possibilities. Authors provide guidance on where to look and how to foster productive generative relationships.


The newly revised edition of this classic work in the management literature demonstrates through metaphors the multiple ways, realities and dimensions of organizations. The new edition contains expanded chapters, “Unfolding Logics of Change—Organization as Flux and Transformation” and “Learning and Self-Organization: Organizations as Brains” which deal with chaos and complexity theory in organizations.


This fine journalist from the Wall Street Journal who monitors new ideas in business is closely following the organizational implications of complexity.


Stacey maintains that the old maps are no good because we are sailing through uncharted waters. It is impossible to predict long term changes in the future of a system. Answers and direction emerge.


New frameworks for sensemaking in organizational life from the new sciences. Doing operations on the edge of chaos to be a creative organization. One of the best works on management and leadership implications emerging from the science of complexity.


A management text that traces the development of organizational theory and
Some suggested reading, continued


This is one of the best introductions to complexity. Told through the stories of some of the leading contributors to this new science—engineer, computer scientist, and psychologist John Holland; economist W. Brian Arthur; biologist Stuart Kauffman; computer scientist Chris Langton. These contributors come from a variety of disciplines and have come together through the Santa Fe Institute.


Fascinating article about Dee Hock and how he used the principles of distributed control, a mix of collaboration and competition, simple rules, and diversity in the organization of VISA and his current drive to help social, environmental and community organizations use the concepts from complexity and chaos theory.

Note: For a more comprehensive, annotated resource guide, to share comments on the article, or to learn more about VHA’s efforts to introduce complexity theory into health care, you may e-mail Curt Lindberg (clindber@vha.com), telephone (609-395-7776), or write (VHA, 68A South Main Street, Cranbury, NJ 08512).

Author information

Curt Lindberg recently accepted a new position with VHA Inc., a national network of over 1,400 community owned hospitals and health care organizations, as Senior Consultant, Complexity Management. In this capacity he is responsible for uncovering promising new organizational and leadership concepts for the benefit of the members. In his previous role, Curt served as President of VHA of New Jersey, one of the health care alliances that form the regional structure of VHA, Inc. Mr. Lindberg has a bachelor’s degree in economics from Bucknell University and a master’s degree in health care administration from The George Washington University.

James Taylor is President and CEO of the University of Louisville Hospital. Prior to this position, he held senior management positions for Fletcher Allen Health Care, the Medical Center Hospital of Vermont, and Saint Luke’s Hospital of Kansas City. He was President and CEO of the Medical Center of Vermont for 12 of the 14 years he worked there. Mr. Taylor received a bachelor’s degree from Washington & Jefferson College, an MBA degree from the University of Hawaii, and a MHA from the University of Minnesota.
Introduction

The Army Medical Department has used both Total Quality Management and Process Reengineering to transform its corporate headquarters and over 100 separate dental and medical facilities worldwide. Among the outcomes, it won the prestigious Healthcare Forum/3M Innovators Award, and was recognized by Vice President Gore as one of the most innovative organizations in government.

I’ve led the move toward quality management in the federal government since 1988. I was an internal management consultant working with health care and other institutions to help them transform themselves into more innovative organizations. I have made lots of mistakes—that’s unavoidable in these kinds of situations—but the lessons are about transforming a bureaucratic or traditional organization into a more dynamic, innovative, quality-oriented organization.

Two types of organizations will be discussed in this article, the traditional and the innovative. I’ll define what bureaucracy really is, and cover its good and bad impacts on organizations. I’ll also discuss how to capture the ideas of your work force so you can maximize the potential of your workers and have them really wanting to come to work and feeling like they’re meaningfully contributing to the job.

In America, it doesn’t matter any more what your rank is or how many awards and degrees you have. It’s irrelevant. The challenge of the 90s is to find ways to capture the innovative and creative spirit of all workers. The driving forces in organizations today are people and their ideas, not control and authority. TQM and innovation can unlock the potential of people and their ideas, and can transform the traditional organization. With the right tools, even a hippo can be made to fly!

Headquarters, First U.S. Army

Headquarters, First U.S. Army, is like a corporate headquarters. Located in Atlanta, Georgia, it has a staff of 260 people, and is responsible for the mobilization, training and readiness of all Reserve National Guard units in the southeastern U.S., including Puerto Rico and the Virgin Islands. It’s also responsible for military assistance to civilian authorities in the event of natural disasters. If anything involves the military, it assumes command, control, and support for that.

The Army Medical Department

Like many organizations, the military is getting smaller and smaller, and it has to do more with less. One solution is to develop and use more high tech equipment. Global Positioning Satellite (GPS) equipment, for example, is now being used by the medical department. You’re probably familiar with its use in navigation; it enables
people to pinpoint, within a few feet, the location of a piece of equipment anywhere in the world. In Operation Desert Storm commanders in the field knew exactly where every tank was, and they could monitor what was happening by using a laptop computer. That makes managing information a lot quicker. The Army has to be very accurate, very quick and, unfortunately, very lethal when necessary.

We are in the process of using GPS equipment to enable medics to monitor a person's vital signs remotely. A device monitors vital signs, and if a soldier is wounded or injured, it activates and sends an alarm (via satellite) to the closest medical unit, so the proper medical equipment can be sent by the fastest means possible to their assistance. Soon every soldier will have one, miniaturized and worn on the wrist like a Dick Tracy watch.

They are also involved in telemedicine, teleradiology, telesurgery, roboticsurgery, and virtual reality. A doctor can be on the border of the mountains between Croatia and Bosnia with an injured civilian or soldier, and if they feel they don't have the skills to treat or diagnose the person, they can use our telemedicine link with Walter Reed Medical Center where a specialist can help diagnose the patient and tell the on-site physician what to do.

We have a similar link in the eastern hemisphere, in Tripler, Hawaii. A medic was on one of the little islands treating the local populace, and encountered a person with a badly infected foot. He was able to diagnose it and save his foot, using satellite communication and an expert system in place at both ends of the link.

We even have a virtual-reality human being that we're experimenting with. When a surgeon cuts, it actually bleeds and the tissues retract. The Army hopes to save years in training a general surgeon when they're going through their residency.

Military managers and other personnel are concerned about many of the same things that you and your employees are—reward and recognition, reengineering and technology, changing culture. I hear leaders from businesses asking the same questions we ask:

• How do you manage change effectively?
• How do we get our people to understand the business environment?
• How do we make our people feel valued and able to contribute to the job?
• How do we reduce costs and improve performance?
• How do you get people to be creative when they're dealing with all these forces day in and day out—downsizing, budget cuts, TQM, CQI, Reengineering, 7-habits, or whatever?

So the bottom line questions are these: How do you keep the frontline workers and managers involved and positively motivated in this environment? How do you get them involved with the change process that leaders from on high want them to get involved with? That's what I will now cover in the remainder of this article.

When do you get everyone involved, and how do we become innovative? First, I
When to get started, cont.

think the best time to be innovative is when there’s chaos going on. If there’s any best
time to change, it’s now while the culture is fluid and flexible. If you wait until things
stabilize—if it ever gets stable again—it’s going to be harder.

Example: people wanting
to contribute

In 1992 the space shuttle Endeavor went to capture a satellite with a big robotic
arm and bring it back to earth. This was all being shown live on CNN. The satellite was
spinning, so if they grabbed it the wrong way it could cause severe damage, not only to
the astronauts, but to the recovery system arm. The astronauts tried twice and failed.
Then they stopped and waited. There would be time for only one more attempt and
NASA wanted to make sure they would be successful on the next try. Otherwise they
would lose a $70 million satellite and an expensive mission would be a failure.

Then something amazing happened that most people never knew about. Hund-
dreds of Americans started faxing, writing, and calling the Johnson Space Center with
their innovative solutions to this dilemma. An elementary student wrote, “I have been
watching the Endeavor mission on cable TV and I’ve come up with some ideas to help
grasp the satellite. My idea uses blankets or sleeping bags instead of a gloved hand. The
blanket or sleeping bag can be used on any part of the satellite hopefully without
damage.” Signed, John Worley, and he included a drawing on how that should happen.

The idea that I liked the best was this: “What you need to do is dress one of those
astronauts in a giant Velcro suit, put a rope around his waist and let one astronaut
throw him on the satellite. Then reel him in.” Hundreds of these were coming in.
Volunteers, unpaid, nonprofessional people, suggested innovative solutions to a multi-
million dollar dilemma.*

The point is that people want to contribute. You will have to listen to a lot of
crazy ideas in order to find a gem, but then miners dig a lot of dirt before finding the
gold nuggets. What this shows is that we can surface an amazing potential of people if
we’ll only let them contribute. We don’t have bad leaders. We don’t have bad people
who work in business. But we do have bad systems. The system doesn’t let them do
that. Oh no, you’re only a Lt. Col., not a General. You’re only a VP, not the EVP.
You’re the COO, not the CEO. We create all sorts of barriers and obstacles in our
systems, and it inhibits creativity and innovation.

Sea Gull Management

The traditional organization in America, is the hierarchy: the top person on the
top and the lowest ranking person on the bottom. I’m not saying this is bad structure,
although too much of it may be bad. It’s the culture and the environment in an organi-
zation like this that could be bad, especially when they practice Sea Gull Management.
Sea Gull Management is what happens when someone screws up—the top executives in
the company fly in like sea gulls, squawk all over the place, eat all your food, crap all
over everybody, fly away and leave you a bigger mess than you ever had before. It’s
called an assistance visit. That’s what traditional organizations practice.

**Reinventing government**

President Clinton and Vice President Gore recognized the problem and they started reinventing the government. I admire that. They’ve made a lot of progress, but this is the sort of thing we face day in and day out: We have so many rules and regulations that say what we can’t do, that you’re afraid to do something because some of you might break a rule. If you’re going to be innovative in a traditional organization, you cannot be afraid to break the rules. I have a saying that we like to use in the government: Proceed until apprehended. Don’t ask for permission, just do what’s right! That is the leadership characteristic we need from managers in organizations that don’t improve simply because they’re too bureaucratic to deal with obsolete or bad rules and regulations. Don’t be afraid to break the rules, because management’s job is to remove the barriers and obstacles that prevent people from doing the right thing.

**Understanding bureaucracy**

What is bureaucracy? First, I will say that bureaucracy is neither bad nor good. It is a structure that controls power, controls resources. There’s nothing wrong with bureaucracy. But, if you become bureaucratic, then that’s bad. I like this quote: “Bureaucracy is an unnatural act committed by non-consenting adults.” Sometimes we do it to ourselves: Let me create a new forum to control this process, a new department: Let’s create a TQM office, a Quality Leadership Office, a Reengineering Office, a White Hat Office, an Office for Everything. And what we end up with is a Quality bureaucracy. It should be our culture. Quality should be in everything we do. Granted, you probably need an office to get started. In the military, officers’ change assignments every three years. We may end up with a permanent innovation office or a quality leadership office to get the thing going, because we have so much turnover. But eventually you want everyone to be a quality expert, not just one or two people.

**Role of the internal consultant**

If you’re a Quality consultant, I suggest you be careful to avoid making the organization dependent on you. I believe that quality consultants, especially internal ones, can fail to create a culture for quality because we want to be in charge. We want to fix the organization. We want to be the leader. But you know what? If we make ourselves responsible, we’re never going to get that organization to change. We somehow have to take our skills and techniques and make the boss the one responsible for making the decisions, not you. Sometimes you just have to play dumb. “Smith, what do you think about that?” “Well, I don’t know. What do you think about it, sir?” Get them to own these decisions, otherwise it’ll never change. Get the boss to assume the responsibility for it.

**Recognizing a bureaucratic organization**

How do you know if you are a bureaucratic organization? Well, there are a few symptoms:

1. You don’t know who your customer is. That may be a good clue.
2. You have no measurement or metric on measuring customer focus.
3. The senior executives don’t really know what quality is. “Deming’s dead. Isn’t TQM going away?” We said, “We’re going to use the Baldrige criteria. Everybody
Recognizing a bureaucratic organization, continued

in the Army is going to meet the Baldrige criteria, because that is sort of like a destination, this is what a quality organization should look like." So what you need to be doing when you work with these executives is say, “Hey, this is what a quality organization looks like. Let’s start measuring what this says we need to be doing.”

4. The reward system is conventional. If you’re going to a team environment and you’re only rewarding individual heros or those with longevity, you’re just telling the people that you only value the same old way of doing things. Certainly you’re also going to have exceptional individual performances that need to be applauded. But you have to start rewarding teams, team behavior, if you want to have good teamwork.

5. You have to have a vision of where you’re heading: What is this organization going to be? What do we want this organization to look like? Is it customer focused? Is it going to be team oriented? Is it going to be doing the best at what?

People need to have a vision or they perish.

6. Flexible and able to change direction when necessary. We have to have organizations that are like schools of fishes that can change courses in order to adapt with everything that’s changing around them. You have to have infrastructures that can be flexible and respond to those changes. That’s difficult when you have the traditional bureaucratic organization.

7. You have to be focused. What is it you’re focusing on? Is it bottom line? Is it external customers? Is it internal customers? Is it solving world hunger? Whatever it is, you have to be able to understand what it is, be friendly, have fun.

8. Innovative organizations are essential. It all boils down to this: If we’re going to survive in the future, we’re going to have to be innovative, or we’ll be gone. I don’t care what organization you’re in. If you’re not innovative, you’re going to be history.

A silly exercise

I’ve developed an exercise to demonstrate a point. First, put your arms down by your side. Then cross your arms the way that is natural to you. Now put them back down. Now do the same thing again. Notice if you’re left over right or right over left. Now I want you to cross your arms opposite of what you just did. Does that feel strange? The point of this silly exercise is to let you understand that we get comfortable in doing the same things the same way. Our leadership style, likewise, seems to not change either, no matter how many seminars or workshops we go to. We always basically go back to doing the same things the same way. How many three-ring binders do you have in your office that you’ve gotten from seminars? When was the last time you read the notes?

We all tend to feel comfortable doing the same thing, the same way, and maybe we’ve been successful that way. But if we know that we have to make some change, and if we want to continue to be successful in the future, we have to learn to be comfortable being uncomfortable.
Leaders are environmentalists. It’s our job to create the environment where people want to come to work, want to create ideas, and contribute to the jobs. We are creating an environment where people can contribute their ideas. How do you feel when you bring up a good idea at the job? How does it make you feel when someone implements an idea of yours? How does it feel if you have a great idea and they say, “Jim, sit down, we’ll get to that a little later?” What does it make you want to do in the future? Do you have a suggestion system in your organization? How well does it work?

Part of the principle of creating an innovative environment in the organization is getting the other people to participate and make them really feel like they’re part of the organization instead of, “well, we’re here today for the TQM class 101. Tomorrow we will have 102; 103 will be on Thursday.”

At Fort Gillem, we had a lot of activities and very little results; a lot of classes and not many changes. Most of the frontline workers would sit around and say, “Well, the managers have been to training, but nothing’s happened here. What’s going on?” So what we had to do was create an innovative environment that would get the frontline workers involved. We did that by starting with an idea campaign that was designed to provide instant gratification, instant results. When it happened, the people in the organization saw things happen immediately.

The idea campaign lasts three weeks, everybody participates, and it’s done with a sense of fun, zest and humor. We prepare people for it, with leaders in each work group trained and prepared to have idea forms distributed, filled out and collected at the right time. Then we build a sense of interest: Two weeks before the campaign, posters are put up that say “Good ideas are coming.” The next week newsletters come out that say “Good ideas are coming.” The third week the campaign starts off and everybody will contribute.

At Eglin Air Force Base, employees came up with $400,000 worth of ideas: cost savings, new ideas, new revenue approaches, problems solutions, waste reductions. In our experience we find that 80% of the ideas can be implemented by the first-line supervisor. Because it’s done in a high intensity fashion there’s a lot of peer pressure and the supervisors can’t back down because there’s pressure to implement.

Everybody participates. Everybody gets idea forms. The frontline supervisors implement the ideas if they can. If they can’t they come to our office and we can put a process action team together and take it to the ESC for resolution. Everybody who gives an idea gets a coffee cup with our logo that says, “Leave it better than you found it.” It may sound silly but it works because it’s fun. Every week we have a drawing where they get a free parking space or another award or another medal. But it’s done, and what I’ve seen happening in a lot of organizations is a tremendous increase in morale and motivation. Then you can go on with the regular TQM stuff, because once you get buy in from the frontline, it makes everything else a whole lot easier. What I’ve learned over the years is to get the people involved early and then continue with the hard work that we have to do to change the culture.
Lessons learned

We want to eventually change the entire culture so that ideas keep coming up and all the good ones are implemented. We learned how the Japanese do it. Periodically, maybe two or three times a year, they will focus on one particular area that they want to work on. They will say, “We want ideas on this...” So we did that and the result we got, when we did an idea campaign, is that the primary benefit isn’t the money we save or money we generate. The major benefit is that people now come up to management and say, “I have more ideas. I’d like to sit down and talk to you about it.” People want to get involved after that.

The Idea Campaign as a preface

One important lesson we’ve learned is that using the idea campaign—before introducing a major implementation of TQM at a new installation—gets people’s attention. We are doing something different. It begins to create the environment for success. It doesn’t have to be TQM, it could be anything that you’re trying to do. It could be self-directed work teams, or creative innovation centers. Whatever it is, you have to let people know that something is changing here. We’re going in a new direction.

The role of the consultant

I guess you’ve all learned that if you’re an internal consultant you’re never appreciated until you’re gone. Then they want you back. We hired Karen Tate from GOAL/QPC to work with our executives. She did a marvelous job. They always appreciate an outside person. It brings credibility. It doesn’t matter how competent we are as an internal consultant. It helps to bring someone in from the outside.

Involve middle management

If you don’t get middle management involved in the beginning they will kill whatever you do, because they control those people that you want to come to your classes. If you don’t get them involved in your implementation team or your Executive Steering Committee, you might as well forget doing anything else.

Start with something easy

Pick quick easy projects to do in the beginning. Pick some projects that you know will be successful. Start off small to build confidence and gradually make the projects more and more complicated, more in detail. If you’re doing teams, give them the tools and techniques in process action teams.

Have a plan

You have to know where you’re going. When we started we had a 3-4 page, month by month plan—what we were going to do in November, December, January; train here, train there; in-house, out-house, movies. Whatever it is, have a plan so you can follow it, because if you’re an internal consultant you will most likely, at some point in time, want to be able to say, “Hey, Boss, here’s your plan. You own it.”
Of course, the plan will remind you what to do, but if you don’t have a written and accepted plan, then you become responsible; it’s your program, and you don’t want that! You want it to be the boss’s philosophy.

Communicate

How are you going to communicate it? A newsletter is one good way. What we did is start buying books, tapes, and videos. We bought some simple little booklets and left them in places where people could see them and read them. If you take Juran’s book and tell them to read it in their spare time, they’ll never read it. So we get simple things that people can read and understand, and we provide it all over the building. We also select some articles, from time to time, and leave those laying around. Believe me, people start reading those things.

Build an infrastructure

You have to have some sort of infrastructure. At Fort Gillem we didn’t want to create a shadow quality organization and then the regular infrastructure that really works, so we try to overlay it. Department heads are on the executive steering committee and that’s how they run it.

Have good training

You have to provide good training. Training is essential but tricky. You want the right training at the right time in the right place—just-in-time.

Have conviction

You have to have conviction. If you don’t have leadership support who is convicted (not just committed) and obsessed, you’re going to have problems.

Have recognition and rewards

It seems like there are two schools of thought. One school says you should be rewarded for TQM improvements; the other says continuous improvement is part of your job and therefore it doesn’t need any special reward. I think you do both. I believe that when you’re getting started you need to have a lot of reward and recognition. You’re rewarding the new behavior, the new change. When you don’t reward it, I don’t think you’ll see it. Eventually, when it becomes the culture, you might minimize that. But if you still continue to only reward people with the traditional measures—ten-year pins, twenty-year pins, medals for individual action—then you’re telling everyone that that’s what you want. You also want team behavior, so you need to recognize and reward that.

Take benchmarking tours

Being in Atlanta we’re near a lot of civilian businesses. We found that many times executives don’t know what quality looks like. So we took executives to the Ritz Carlton hotels to see how a Baldrige winner does quality. We took them to John Deere, to Ford...
Motor Company. All of a sudden lights started going on. I can stand in front of people for days and speak to them, without developing a full understanding. But when I let them see for themselves, they understand it. So early on we take people to different companies and corporations to see what quality looks like.

**Encourage innovation**

We want to have something more innovative, where teams are more dominant than individuals, where people feel like they own part of the organization, where they're trained and motivated, where there's awards and recognition. Now that doesn't mean putting everybody on teams. Some people are not team players. I think God made them that way. Some organizations are better team oriented than others. Even within the government, with our bureaucratic style of management, we have self-directed work teams. We have SEAL teams, Special Forces Teams. These are the epitome of teams.

**Demonstrate that people are important**

We want people to be the vitality of the organization, the heart and the breath of the organization, where they can contribute and go home at night and tell their sons and daughters, “look what I did today. I contributed something and the boss patted me on the back and told me he appreciated what I’d done.” Many times we forget the people who contribute the ideas.

**Give it time**

Don’t expect it overnight. It takes years. The real goal is to change the entire culture. Now you can make some quick projects happen in a few days or a few weeks. But culture won’t change overnight. You don’t want to settle for only superficial implementation.

**Author information**

This paper was developed from a highly-rated presentation at GOAL/QPC’s annual conference. At that time Gregory P. Smith was a U.S. Army Lt. Col. and quality consultant for Headquarters First U.S. Army, at Fort Gillem, Georgia. Col. Smith was also Director of Innovation and Total Quality Management for all the U.S. Army’s medical and dental organizations located around the world. He helped reengineer the Army’s medical department (one of the largest health care organizations in the United States), which was recognized by Vice President Gore as one of the most innovative organizations in government. He has since retired from military service and is the founder and President of Chart Your Course International, a consulting firm in Conyers, Georgia. He is a popular speaker to groups around the country on innovative leadership.

Seven Tools for Enhancing Total Quality Management and Company-Wide Creativity

Author

Bob King, President and CEO, GOAL/QPC, Methuen, Massachusetts

The benefits of using the Seven Creativity Tools

The Seven Creativity Tools improve the effectiveness of a whole range of activities under the umbrella of Total Quality Management (TQM) and make possible Company-Wide Creativity. In the Plan, Do, Check, Act of Continuous Improvement, more and better ideas are generated for alternative actions. In Hoshin Kanri, or policy deployment, more breakthrough options are developed. This helps to solve the problem of people continuing to do the same things even if they don't work. In Quality Function Deployment (QFD), the Seven Creativity Tools provide new and powerful methods for bottleneck engineering, and eliminate quality characteristic conflicts without trade-offs. As these successes increase, the organization is able to introduce company-wide creativity with all employees and, therefore, generate and implement better ideas.

Background

GOAL/QPC began its creativity research activities in the mid 1980s. The purpose was to fill the need for innovation methods that could be used when continuous improvement would be too slow to meet required targets.

This led to an investigation of what was currently available in the United States. One of the first leads was Gerry Nadler, of the University of Southern California, with his approach to Breakthrough Thinking. This method looked promising, but it did not have the detailed systematic rigor that GOAL/QPC customers had used with the Seven Quality Control and the Seven Management and Planning tools.

Finally, almost by accident, I was teaching a course in QFD in Germany and discovered the work of Dr. Helmut Schlicksupp.

The work of the Battelle Institute

Dr. Schlicksupp had participated in the work of the Battelle Institute in Frankfurt, Germany in the mid 1970s. He was a member of a team that invited the leading companies of Europe to bring their toughest problems. The team also gathered and categorized all of the creativity and innovation methods they could find. Then they applied these methods to the various problems and began to draw some conclusions about which methods worked on which problems.
The work of the Battelle Institute, continued

Companies were thrilled with the breakthrough results. They asked for seminars on these methods that could be taught to other employees. Dr. Schlicksupp was assigned to develop and teach these seminars. Although funding for the program ran out soon after, he has continued his work with a wide variety of companies.

These creativity tools, identified by the Battelle project and refined by two decades of practice, have been further refined by GOAL/QPC to form the Seven Creativity Tools. Many U.S. manufacturing and service companies have already begun to deploy training. No other subject ever introduced by GOAL/QPC has ever achieved such universal acclaim by customers as has these tools.

Continuous Improvement

Continuous improvement involves the plan, do, check, act cycle, in a seven-step process:\n
**Plan**
1. Select the problem/process that will be addressed first (or next) and describe the improvement opportunity.
2. Describe the current process surrounding the improvement opportunity.
3. Describe all the possible causes of the problem and agree on the root cause(s).
4. Develop an effective and workable solution and action plan, including targets for improvement.

**Do**
5. Implement the solution or process change.

**Check**
6. Review and evaluate the result of the change.

**Act**
7. Reflect and act on learnings.

After the problems have been analyzed, and the likely causes documented with data, the time arrives to develop the alternative action. Most teams use the brainstorming approach—a very good tool if the problem has been solved before, and if those who have the needed knowledge are available to participate. If, on the other hand, it is a new problem or one that needs new approaches, then one or more of the creativity tools should be used to supplement the brainstorming. The Seven Creativity Tools offer a diversity of individual and team thinking tools that have been proven to be most effective in idea generation.

Hoshin Planning

With regard to Hoshin Kanri, the PDCA cycle is effective in developing the plan, implementing it, checking the results, and adjusting the plan on a monthly, quarterly, and annual basis. One of the major weaknesses of conventional business planning is the danger of continually coming up with the same plan. The creativity tools, in conjunction with Hoshin planning, improve breakthrough thinking. They make it possible to generate a wide range of possibilities from which the best course of action can be se-
Hoshin Planning, continued

The tools can be helpful to employees who are looking for ways to support their bosses' targets and means.

QFD and cross-functional management

In the area of cross-functional management, especially in Quality Function Deployment, the Seven Creativity Tools are essential. First the team identifies the customer need which will grow market share. The Seven Creativity Tools provide an important ingredient to bottleneck engineering, and thereby help achieve a world-class breakthrough on that customer demand.

An introduction to the tools

Brief Description of the Seven Creativity Tools

The Seven Creativity Tools enhance individual and team creativity. Each of these tools is the most effective of a family of similar tools. What follows is a description and graphic representation of the Seven Creativity Tools.

Tool #1: Heuristic Redefinition

Redefining a problem, and understanding it as a system, can be useful to finding a solution. Heuristic redefinition can help one see the different elements and underlying structure of a problem. This tool involves drawing a symbolic picture of the problem (which serves to get your mind to conceptualize a simplified whole) and then identifying (listing) the different parts of the system. The next step is to construct a prioritization matrix (see the example in Figure 1) to select the one or two ways of looking at the problem that are most likely to succeed.

Figure 1. A Prioritization Matrix for the Problem of Watering Plants

<table>
<thead>
<tr>
<th>Options for extra moisture for plants</th>
<th>Chance to be solved</th>
<th>Needed effort to solve</th>
<th>Degree of goal achievement</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Supplying additional water</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>2. Controlling amount of rain</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>3. Reduce sun radiation</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4. Reduce evaporation of plants</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5. Reduce evaporation of soil</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>6. Sore rain at the roots of plants</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>7. Bring moisture up from depth</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>8. Guide rain to roots</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>9. Prevent runoff</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>10. Plants w/ storage (camel effect)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

3=highest rating
2=moderate rating
1=lowest rating
Tool #1: Heuristic Redefinition, continued

Another way of redefining a problem is through Gerry Nadler’s purpose hierarchy, the product cycle S-curve, or technological evolution (Figure 2).²

Figure 2. Three Other Methods of Problem Redefinition

Tool #2: Brainstorming

Brainstorming is an essential tool for gathering ideas from a team of people. The process is improved by having a mix of people of different backgrounds, but at least some experts in the area where the solution is most likely to be found. It is important to let the process go on through at least three lulls in the conversation, with the facilitator allowing some periods of silence, if they happen, and then leading a re-start. Some of the best ideas are often produced in later rounds and when time is allowed for thought.

Tool #3: Brainwriting 635

Brainwriting is a method of stimulating new ideas by writing them down. Method 635 is used to gather ideas from a team of six people. It is done without conversation. Each person writes three ideas and passes it to the person on their right. They read these and add three more ideas that are triggered by the preceding ideas. This continues around the circle until each person gets back their original paper. In short, six people write three ideas and pass it on five times. This silent and iterative approach permits more thoughtfulness than what usually happens in brainstorming, and can generate 108 ideas in 30 minutes. See Figure 3 for a sample 635 form.

Figure 3. One Method of Generating Ideas: 635

A 635 Form

<table>
<thead>
<tr>
<th>Person 1</th>
<th>Ideas</th>
<th>Ideas</th>
<th>Ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tool #4: Imaginary Brainstorming

Imaginary brainstorming is a way of stimulating idea generation by changing one element in a brainstorm definition, then generating more ideas, and applying these new ideas back to the original (see Figure 4). For example, a group may begin with brainstorming the issue of how to help employees feel comfortable using the internet. The second, an imaginary brainstorm, would focus on what would appear to be a far-removed idea, i.e., convincing employees to wear cardboard noses. The results of the second brainstorm may then be compared to the first brainstorm to see if any ideas are transferable.

This tool helps break established patterns of thinking, allowing a team to identify more creative ideas and solutions to problems.

Figure 4. Shifting to an Imaginary Problem and Transferring Ideas

Tool #5: Word and Picture Association

Coming up with new ideas can also be generated through association with pictures, words or inventions. A group can look at some photographs or images projected on a wall, and be asked what ideas they stimulate. Random words from lists or dictionaries can be used to trigger ideas that can be applied to a particular problem. These words, images and concepts can be used to stimulate ideas by simple analogy from inventions that share similar principles to the problem being worked on.

Tool #6: Advanced Analogies

TILMAG or advanced analogies are a methodology for gathering ideas by looking for examples of how other people have solved similar problems. One begins by defining the parameters of the ideal solution. These parameters are paired up in an association matrix, and examples that include those parameters are generated. The principles
Tool #6: Advanced Analogies, continued

underlying the examples are then applied by analogy to the existing problem (Figure 5).

Figure 5. Advanced Analogies: An Association Matrix

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice of the customer</td>
<td>interviews, questionnaires</td>
</tr>
<tr>
<td>Selecting the priority/focus</td>
<td>spread <strong>90</strong> points, Analytical Hierarchy Process, customer voting, weighting principles</td>
</tr>
<tr>
<td>Concept generation</td>
<td>7 Creativity Tools, TRIZ/patent search, research, competitor analysis</td>
</tr>
<tr>
<td>Concept selection</td>
<td>boss decides, Pugh’s new concept selection, fast board criteria</td>
</tr>
<tr>
<td>Taking cost out</td>
<td>dropping features, value engineering/trimming, activity-based costing, customer input</td>
</tr>
<tr>
<td>Improving reliability</td>
<td>forced failure (TRIZ), Fault Tree Analysis, Failure Mode &amp; Effect Analysis, Robust Design (Taguchi)</td>
</tr>
</tbody>
</table>

Morphology is a study of form and structure. The morphological box summarizes a systematic search for all possible solutions to a problem. It begins by defining the mutually exclusive parameters of the problem, and then identifying the options for each parameter. By connecting one option from each parameter, and creatively combining them, one will reach a total possible solution. The most appealing solutions are then refined as desirable solutions.

Figure 6 shows part of a morphological box for using QFD for new product development, created during a symposium at the QFD Conference in Novi, Michigan, on June 8, 1997. There are 56 possible approaches to the problem in this box.

Figure 6. Morphological Box: Using QFD for New Product Development

Approach #1: 

Approach #2: 

Summer 1997
Continuous Improvement, Standardization and Innovation

Continuous improvement and standardization are both improved by creativity. Just as the 7QC and 7MP tools foster continuous improvement and standardization, the Seven Creativity Tools foster innovation. Continuous improvement uses a process that follows the plan, do, check, act cycle. The situation is analyzed and the improvement is planned (Plan). The improvement is tried (Do). Then data is gathered to see how the new approach works (Check) and then the improvement is either implemented or a decision is made to try something else (Act). This process of continuous improvement makes it possible to reduce variations and lower defects to near zero.

Creativity supports this activity by generating additional improvement ideas. Innovation processes help select the best ideas and implement them successfully.

The processes that produce good results are standardized and documented. Those documented processes are then followed, and if the process is changed, the documentation is changed. If an organization lacks this standardization, then improvements tend to slip. Without standardization, variation is increased rather than reduced. An important part of improvement is teamwork, and good team activity includes a clear definition of the project.

Standardization was given a major boost in the early 1990s when ISO 9000 became widely accepted as a basic minimum for companies to sell products in the European Union. ISO 9000 required a documentation of key processes and provided a regular audit to see that processes were followed as documented. AT&T initially undertook ISO 9000 compliance as a way to keep and grow business in Europe. When the company realized how ISO 9000 improved its own processes, it began to encourage all its suppliers to become ISO 9000 certified. In 1995, AT&T discovered that its certified suppliers had half as many defects as non-certified suppliers, so it became company policy to give preference to suppliers that were ISO 9000 certified.

Once most employees have mastered the first phase of work improvement, then the organization is ready to move into organization-wide planning. This is a plan-do-check-act process as indicated in Figure 7.

Under the new paradigm of Hoshin Kanri, planning involves all managers in the organization, not just the top people. Plans at all levels are aligned by a process of catchball. This means that plans are communicated vertically and horizontally, and conflicts between plans are resolved. Plans are also documented.

These plans are working documents, not just a once-a-year project that is bound and put on the shelf to collect dust. Each manager monitors his or her plan on a monthly basis and studies both successes and problems. They will standardize successes and must make changes in behavior that will help ensure the plan will be met and, hopefully, even exceeded.
Seven Tools for Enhancing Total Quality Management and Company-Wide Creativity

When one surveys the market and designs new products, it is important to look beyond existing products, and think about competing with what is likely to be produced 3-5 years from now. Problem redefinition (Tool #1) is a key to examining how technologies will evolve.

One of the lines of evolution is the S-curve (Figure 2). It can help predict the life cycle of a product. As a product matures, there are less changes made to it, which often eventually leads to a decline in sales. By monitoring the number of product changes, a planning effort can forecast when new products will be needed, before sales of mature products decline.

Another line of evolution is the mono-poly cycle. Products diverge, and then get grouped together. One example is the development of scissors, which were created when two knives were combined. Another example is an evolution of the knife—different size knives, made for different functions, were eventually combined into a Swiss army knife.

Yet another line of evolution is increasing dynamism. An example is in bicycles, when a shift was made from a rigid direct drive to a flexible bicycle chain.

Uneven development of parts shows where the weak link is in the system and where the next product breakthrough needs to come from. For example, when considering the speed of access to the World Wide Web, the weak link is the limited capacity of the phone line. New innovations include access through fiber optic cable lines and satellite transmission.

Once the 5-10 year vision is established, the details of the 3-5 year plan must be developed. The Seven Creativity Tools make it possible to identify alternative actions.

Summer 1997
Step 3: The One Year Plan

The one-year plan includes the targets, means, and measures that each manager will work on that year. Typically each manager has six to eight target areas. Half of these are related to the manager's participation in the strategic plan and half are related to the critical processes of the person's regular job. All must be measurable with monthly numerical targets.

Step 4: Deployment of the Plan

All workers are expected to be involved in the continuous improvement and standardization of their activities. Each employee should support his or her bosses' activity (see Figure 8). The means of each boss often become the targets for subordinates. Even in the case of self-directed teams, strong effects are made to understand and support the initiatives of the organization.

Figure 8. The Cascade of Targets and Means

Step 5: Execution of the Plan

During the year, the plan is to be carried out by each manager. Key inhibitors to progress are controlled with standardization and problems eliminated with continuous improvement.

Step 6: Monthly Review of the Plan

Each month a report is made matching results to the plan. Charts and graphs are useful for this. A check sheet, for example, can be used to gather data on frequency. This can be aggregated and portrayed on a Pareto Chart, listing the causes from the most prominent to least frequent. This will provide a visual guide for decision making action. Such a methodology for regular checking will ensure continuously improving quality and reducing cost.
Step 7: Annual Review

These monthly reviews are folded together in an annual review, which lists the successes, failures and analysis from the various monthly reports. The annual review also focuses heavily on the planning process. What contributed to effective planning? What detracted from effective planning? Another part of Hoshin planning is the president's annual review. The president meets with a sampling of groups that had planning success, as well as those who had problems. It is an example of seeing how things are going in the workplace. The Seven Creativity Tools help the president's staff generate more alternatives in considering improvements for the coming year.

Total Quality and new product design

Quality Function Deployment

In the late 1960s, it became clear to Japanese industrial leaders that manufacturing quality had improved, but that TQM had to be applied to new product design. This would greatly reduce the rework and quality improvement headaches that manufacturing areas encountered every time there was a new product introduced. This work was undertaken by Shigeru Mizuno and his colleague Yoji Akao. The resulting system is Quality Function Deployment (QFD).

The four phases of QFD

1. Listen to the voice of the customer.
2. Identify priority improvement area to grow market share.
3. Accomplish the breakthrough required.
4. Manufacture at high level of quality especially in the breakthrough area.

Much work has been done in the United States on the first phase of QFD. Many efforts have provided methods for understanding the “voice of the customer.” Also, many new approaches were added to phase 4, getting the quality right in the new product. The automobile industry has spent considerable effort getting their suppliers to continuously reduce variation and cost.

Bottleneck engineering in the United States

What has been missing in the United States is a development of new directions in QFD; getting an engineering breakthrough that will please customers and dramatically increase market share.

Komatsu Mec is a good example of how this should happen. The company had to develop eleven new products between February 1982 and December 1984. Not only did they accomplish it, but did it in such a way that they began to dominate the market. The electronic ignition was one of the key ingredients to their success. However, the issue is where did the idea and final design come from?

The methodology for breakthrough is what the Japanese call “bottleneck engineering.” The Japanese quality leaders joke about the source of the name. If the engineer doesn't come up with the solution, the boss will have their neck.
Dr. Akao, in his text and courses, lists several methods for bottleneck engineering. One approach for bottleneck engineering is the PDPC, the Process Decision Program Chart. Once a breakthrough idea is generated, this chart helps in planning its successful implementation. The chart lists the steps for introduction, and for each step lists what could go wrong, and for each problem lists countermeasures. Finally, the most appropriate countermeasures are selected and a final implementation plan is executed.

Another approach to bottleneck engineering is brainstorming. Assemble a group of the people likely to know how to accomplish the breakthrough. They brainstorm possible approaches, and ideas are reduced by consensus. The ideas are then tested for performance, value, engineering and reliability. The ideas most likely to be successful are then implemented.

The Seven Creativity Tools: One Way for Solving Bottlenecks in QFD.

Tool 6 (advanced analogies) is based partially on the work of Henry Altshuller, who worked for many years in a Russian patent office. He began to classify patents, from simple modifications to major innovations. As he studied the most innovative patents, he began to identify the principles that led to the innovation. He also began to develop a series of algorithms for solving the most difficult problems. It is known as TRIZ. This is now applied in the United States as part of Seven Creativity Tools. Spectacular results tend to be the norm:

- In two hours an automotive supplier came up with 60 patentable ideas for improving a component that had been inadequate for five years.
- In two days, a powder metallurgy problem that had persisted for 10 years was solved, eight different ways.
- A new design concept for a hydraulic hammer design that had a four-year history of field failure was developed in the first half day of analysis.
- A Norwegian graduate student developed a prototype 3-D model maker that is 10 times faster than stereo lithography, as part of a homework assignment.

Rather than use trade-offs, TRIZ eliminates the conflict. Rather than being a problem, contradictions are very important and useful. Here are two examples:

1. Airplanes need to have wheels to take off, land and maneuver on the ground, but the plane has to be streamlined in the air. In TRIZ, the requirement that something have two opposite properties is called a “physical contradiction.” For this class of contradiction, TRIZ recommends separating the properties of the system in time, which leads to the idea of landing gear that can be present on the ground and withdrawn into the body of the aircraft after takeoff.

2. A razor needs to be sharp to cut hair, but the sharper it gets, the more likely it is to cut the skin. An TRIZ analysis would lead to phrasing this contradiction as: increas-
Two examples of identifying contradictions with TRIZ, continued

Improving the capacity to do work causes an increase in the harm done by the system. When improving one parameter causes another to degrade, we have a “technical contradiction.” Conventional engineering frequently tries to compromise the solution when a technical contradiction arises; that is, a trade-off is made based on how much good will result versus how much harm.

TRIZ uses a contradiction matrix to index the principles of innovation that have been gleaned from studying 2 million inventive patents. In the case of the razor, an applicable principle is “localization of quality,” which states that different parts of the system should be optimized to do specific functions. The product team decided that they should make the razor blade very sharp to optimize cutting, and then design the blade holder to push the skin out of the way to avoid cutting it. The razor can cut very close without harming the skin, and many different designs are now on the market that apply this principle.

Conclusions of QFD

This is a type of advanced problem solving that requires the taking of different views—one looks at the system level, the supersystem, and any subsystem of the problem. The reason for this is that what looks like a technical contradiction at one level may look like a physical contradiction at another level. Having several views enriches the set of available solutions and leads to the generation of better options. This represents a great improvement since the time when bottlenecks were ignored as part of QFD in the United States.

References


Author information

Bob King is president and CEO of GOAL/QPC. In the 1980s, Mr. King was a leader in researching and teaching advanced Japanese management methods in the United States. His clients have included IBM, Hewlett Packard, Procter & Gamble, Ford Motor Company, Philips, Intel, Bethesda Hospital and others. This year he was awarded the Akao Prize for lifetime contribution to Quality Function Deployment (QFD). In the 1990s, Mr. King has focused his study on Creativity and Innovation, and how they can contribute to improved planning, problem solving and new product development. He is working on his third book, which focuses on Creativity and Innovation. His previous two books are Better Designs in Half the Time, and Hoshin Planning: The Developmental Approach. He served as an examiner for the Malcolm Baldrige National Quality Award in 1989 and 1990.
Dana Commercial Credit Corp.
Malcolm Baldrige National Quality Award Winner, 1996

Authors
Edward Shultz, Chairman and CEO
Kevin Moyer, President of Capital Group
Donna Marie Lilly, Manager, Quality Initiatives
Bruce Mullkoff, Vice President, Human Resources
Gregory Sting, Transaction Manager
Phil Silva, Vice President, Field Sales
James Beckham, Director of Quality

Background information
Edward Shultz—Dana Commercial Credit Corporation (DCC), is a leading provider of business lease financing services with seven market segments: Capital Markets, Dealer Products, Diversified Capital, International Operations, Asset Management, Shannon Properties, and Technology Management. DCC is a wholly-owned subsidiary of Dana Corporation, a publicly held, $7.7 billion (1996 sales), worldwide manufacturer of vehicular parts for original equipment and aftermarket use.

With headquarters in Toledo, Ohio, the company was started in 1980 with a $2.5 million investment from Dana Corporation. DCC’s assets have grown to $1.7 billion, making it the 11th-largest leasing company among 2,000 such companies in North America.

DCC does highly structured tax-oriented transactions that have to be done quickly and confidentially, and they must be done right the first time. We also do sales-aided leasing, what we call dealer products. We assist manufacturers and dealers, particularly in the personal computer market, in selling their equipment by providing lease financing. We have a number of other products that we provide, but basically we’re in the value-added business. We provide something other than money. We fulfill a tax structuring or marketing need.

We do lease some very large items, like 747-400s to KLM. The transaction allowed KLM to benefit from U.S. export sales incentives, along with providing them new sources of financing, which are always important to capital-intensive businesses.

We’re a company of 550 people who manage a $1.7 billion portfolio and invest roughly $500 million a year. We make a little over $30 million in after-tax profits for the Dana Corporation, which represents about a 25% return on equity. We operate in the United States, Canada, United Kingdom, and continental Europe. Our mission is to be the first in knowledge, first in quality, and first in customer satisfaction. That has also helped Dana Commercial Credit become one of the most profitable leasing companies in the United States.
Leadership

Edward Shultz—Good leaders must first know and understand their constituents. The primary constituent is our shareholder. But to us, what is basic about leadership is the understanding that the best way to serve our shareholder well is to serve our other four constituents well—our people, customers, suppliers and community.

It is not true that one has to make choices as to whether to do what’s in the best interest of your shareholder or your people, or what’s in the best interest of your customer, or your shareholder. The effective leader understands that the best way to serve each of these constituents in the best possible manner is to serve them all well. If we’re responsible to our people, make every attempt to be fair to them, train them properly to do their job, and recognize them for their accomplishments, they will respond with a quality of work and contribution far superior to those who are not treated as well.

We believe that by being reliable, dependable, and always giving our customer good value, we will be rewarded with their return business and a premium for superior products if necessary. If we work with our suppliers, instead of beating them up all the time, they will not only reward us by taking care of us first, but they will continue to look for opportunities and product improvements to enhance their relationship with us.

We draw most of our people from the communities in which we live. By being good corporate citizens and maintaining a good positive image in our community, our people can take pride in the company where they work, and they will further cherish their jobs. We, in turn, will be able to draw the best people from the community. It will be considered a privilege to work for us.

Too many times, in my 30 years of experience, I’ve seen people who saw some short-term benefit in mistreating their people, mistreating customers or suppliers, or not being a responsible member of the community. Most of the time, the intended short-term gains are not even achieved. But in all cases, the long-term results are disastrous. It may take years to establish a positive, trusting relationship with your constituents. It can be destroyed with one stupid, selfish, or even thoughtless act. It can then take years before that relationship can be reestablished, if ever.

Additionally, we at Dana Corporation are required to act in a totally moral and ethical fashion. There are several advantages to operating this way. You don’t have to be afraid that somebody’s going to catch up with you. You don’t have to be afraid that somebody’s going to find out what you did. You can look at all of your people, and everyone you do business with, right in the eye. People respect those people who do the right thing; they do not respect people who act in an unethical or immoral fashion.

We have an ethics card that is given to all of our people along with a 30-minute speech from me, which among other things says: “Do engage in conduct which you would not be embarrassed to read about in the newspaper or discuss with your family.” That’s our standard, pretty simple, not what is arguably legal, or what can you get away with (see Figure 1). If you don’t tell your people how they’re to conduct themselves they
may believe what they see on television—that they’re expected to do anything to make a buck. This is particularly true of younger people who have no idea how business people actually conduct themselves.

Figure 1. Dana’s Ethics Card

<table>
<thead>
<tr>
<th>DOs and DON’Ts of ETHICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DO honor the Dana policy statement on citizenship and ethics.</td>
</tr>
<tr>
<td>2. DO engage only in conduct which you would not be embarrassed to read about in the newspaper or discuss with your family.</td>
</tr>
<tr>
<td>3. DON’T accept from or give to suppliers or customers unreasonable gratuities and do follow the specific guidelines of your division.</td>
</tr>
<tr>
<td>4. DON’T engage in activities which create the appearance of a conflict between your personal interests and the interests of Dana.</td>
</tr>
<tr>
<td>5. DO be honest and avoid overstatement and exaggeration in all forms of communication.</td>
</tr>
</tbody>
</table>

DCC stands out in our industry as a company that has a clean, unblemished record. Probably half of our business in the large ticket arena is from customers who got the old bait-and-switch, or failure to perform, from another leasing company. They need to get their transaction done quickly from somebody they can trust.

**Education enables successful empowerment**

We also understand the importance of education—so much so that we started our own education group back in the early 90s. Our people will, on the average this year, receive 60 hours of education, three times the national average. Education allows us to empower our people. (If you empower uneducated people you only increase the rate of bad decisions.) Educated and empowered people have better morale. They work better together. They’re better able to serve the customer. Our people are better able to deal with customer issues. They’re better able to recognize problems before they become serious, and are able, many times, to find solutions our competitors do not.

**People deserve a performance review**

Too many managers have neither the ability nor the confidence to evaluate their people. They’re doing their people and themselves a serious disservice. Too often I’ve seen people let go when they’ve had a documented history of good performance. The managers would not deal with their problems, so they continued to give them good reviews or no reviews at all until they could no longer tolerate the problems. Not only is it unfair to not give somebody the opportunity to improve, but it creates morale...
Leadership, continued

problems in their department when poor performance is not dealt with. There is, of course, the legal ramification of this kind of poor management as well.

Anonymous surveys can help management improve

We found it important to have surveys where our people can anonymously express themselves relative to the business, their job function, their level of empowerment, and their perception of the quality of management. We did our first people survey in 1991. What a wake up call! They didn’t think we were as good as we thought we were. It was embarrassing, but it did give us the opportunity to improve. By the way, our most recent surveys are much more favorable. In short, we think leaders must have the courage to be judged by their people. Unfortunately many managers don’t have that courage.

The Dana Style

A lot of what I’ve been talking about we call The Dana Style. The Baldrige Examiners referred to it as our value system. A quote from the summary is: “While in other organizations the leadership system is the driver of corporate values, in DCC the corporate values drive and make up the leadership system. The values also drive the views and actions of both the leaders and the employees. The values, expectations and directions are virtually 100% deployed.” From our feedback report we can see that one of the reasons for our winning the Baldrige Award was our culture. They talked to almost all of our people, without supervisors present, and as far as we know did not find one disgruntled person. We feel privileged to have a leadership that provides this style of management.

Basic to The Dana Style is our policy of promotion from within. In the early days of dealer products we continued to have problems as a result of hiring senior people from the outside. Then we made a decision to only promote from within, and we have not had a serious problem since.

Another example of The Dana Style is that people set their own objectives. The Baldrige Examiners found it hard to believe that our people actually did set their own objectives. It has been our experience that when you let people set their own objectives, they’ll usually set them higher than you would have set them, and you certainly know that you have buy-in. We find that The Dana Style gives us a competitive advantage. People like doing business with us. Our intermediaries bring us better deals. We’re able to deal with the top accounts. And we have, so far, been able to grow as fast as we consider reasonably prudent.

Shareholder benefit

Now, let’s take a look at the results that this style of management has given to our shareholders. We have had continuously improving operating profits each year since 1981 (Figure 2). In each of those years we exceeded Dana’s financial goals, particularly in the area of return-on-assets and return-on-equity (Figure 3).
Leadership, continued

Our conservative accounting practices have resulted in substantial upside in a number of transactions in which we have been involved. When we benchmark our results against those leasing companies in the Standard & Poor’s, and those leasing companies that are listed with the Equipment Leasing Association, our return-on-equity is twice that of the average. Our return-on-assets is quite a bit higher as well. By the way these are five-year averages, not a one time comparison. All this would indicate that our shareholders are getting good value.

Now, what happens in the future? Our strategic planning process has been very efficient in keeping our products refreshed. We continue to be able to call out less profitable products while continuing to grow as fast as we consider reasonably prudent (see Figure 4, asset growth). If even half of our current list of products under development are successful, we will have doubled our size by the year 2000. So, I hope you can see from these results that by being responsible and committed to our people, to our suppliers, to our customers, and our community, we do serve the shareholder well.
Strategic Planning

Kevin Moyer—Developing a comprehensive strategic planning process has been critical to setting a direction that ensures the ongoing success of ourselves and our customers. Our formal, eight-phase, strategic planning process, started in late 1991, is captured in a 90-page process guide and information package that integrates plans for customers, operations, people, suppliers and quality (Figure 5).

Figure 5. Strategic Planning Process

We believe there are four secrets to successful strategic planning. We call them secrets because when we started this process, the impact of these keys was unknown to us. With the knowledge and the experience that we have gained, we now hold each of these four secrets to be keys to our strategic planning process.

1. Detailed Strategic Plan For Each Business Unit

The first secret is to require detailed strategic plans from each of our seven decentralized product groups. These product groups are self-contained business units responsible for new product development, daily operations, product distribution and financial performance. This places a significant part of the planning process with people who are closest to the customers and markets that they serve. Each product group’s written plan contains trend dynamics, customer inputs, SWOT (strength, weakness, opportunity and threat) analysis, and a strategic marketing plan that is completed for each group’s primary and secondary market segments. The plans contain investment parameters as well as objectives for all aspects of our business. Each product group is guided by DCC’s strategic plan and operating philosophy, which was developed by the company’s operating committee to provide the overall framework for the strategic planning process. We use this business philosophy to provide us with the communication tool regarding the company’s overall value system, the manner in which we will approach our markets, and our strategic business objectives. It makes clear our individual roles and responsibilities for the process. While the process is continuous, senior management meets twice
Strategic planning, continued

annually to review the input and to validate each strategic plan, as well as to learn and improve the process.

2. Trendynamic Inputs and SWOT Analysis

The second secret is the importance of up-front inputs and analysis from which the strategic plan will be formulated and executed. At the core of these foundational inputs are the study and evaluations of trendynamics. Trendynamics represent external uncontrollable inputs, causing us to look beyond ourselves and our customers as we are today and to the future and what we might be (see Figure 6).

Figure 6. Trendynamics

DCC’s trend analysis covers a broad spectrum of trends, from financial to market and from socioeconomic to technology. This trend analysis enables the company to manage the variety of risk that we might encounter. Other inputs directly relating to customers and their expectations, competitors and markets are gathered by each product group from a variety of sources and means of data collection. Inputs gained from trend dynamics and direct inputs from our customers caused us several years ago to begin research on an emerging trend in the asset management area.

We found that many of our customers were challenged with finding a way to effectively manage their microcomputer assets. By strategically acquiring WyzDOM® asset tracking software we added a new group in 1996 called Technology Management. Today we offer a complete life-cycle approach to managing computer assets from acquisition to disposition, a key value service for our customers.

Trendynamics has kept us at the forefront of trends in outsourcing, partnering, and providing profit improvement solutions for our customers well before they were recognized by the overall market and our competition. It has ensured not only a stable, broad base of core products but has significantly increased our array of product development. And it has served to increase the level of expertise in the company considerably.

The strategic marketing plan is based upon the evaluation of inputs using SWOT...
strategic planning, continued

Analysis. Our current and proposed market segments, with their related products and market delivery channels, are reviewed in light of each group’s strengths, weaknesses, opportunities and threats created by competition and other forces outside our control. Considering our alternatives and comparing them against our capabilities provides the very basis for strategic planning and for formulating the actions that we will take. The SWOT analysis therefore becomes the basis for each product group to determine its key business drivers, which are those factors that are important for them to succeed, or those problems that they might encounter along the way.

3. Integrated Quality Requirements

The third secret is the integration of quality requirements. We began the integration of quality requirements with total quality management in 1992, and with the Malcolm Baldrige Criteria in 1993. Two quality requirements that particularly strengthened our processes were greater attention to customer feedback and human resource needs. This resulted in a strategic planning process that covered all the criteria in a well integrated manner. Key performance requirements exist for each of the business drivers. Individual performances towards established goals are evaluated twice per year during our performance appraisal process. The strategic plan identifies a person or department for each performance measure and the associated service process that is responsible for achieving the goal. That performance is monitored monthly on Scorecards. In our product groups, the Scorecards concentrate on the customer. In Human Resources, the Scorecards concentrate on our most important asset—our people.

4. Strategic Thinking by the Entire Organization

The fourth secret to the strategic planning process is to facilitate strategic thinking throughout the entire organization. To be able to think strategically, the strategic plan must be communicated to everyone. To accomplish this all product groups review their strategies with their people, and our DCC strategic plan and operating philosophy is reviewed with everyone in the organization. While 10% of our people are directly involved in the strategic planning process, in excess of 70% of our people are involved in collecting customer expectations and market data; 100% of our people are involved through individual and team generation and implementation of ideas, as well as through the setting of their own individual performance objectives and training objectives.

Summary

In summary, our comprehensive strategic planning process has provided us with the ability to deal with ever-present, fast-moving and sometimes abrupt change. It helps us maintain our niche-market focus and create product differentiation for our customers. Strategic planning facilitates the alignment of our tactics and our delivery systems to create competitive advantage. In the final analysis, creating sustainable competitive advantage was what strategic planning is all about.
Information and Analysis

Donna Marie Lilly—We’re organized into customer segments called product groups, which are designed to meet the specific needs of our customers. These decentralized business units make decisions based on their specific customer needs and the products they provide. They also possess the resources necessary to manage the customer, competitor, market and people information necessary to support the key business drivers of customer satisfaction, quality processes, knowledgeable people and profit for the shareholder. We use many information channels to collect data and information, such as customer visits, surveys, third-party studies, e-mail, idea programs, 800 numbers for customer access, help desks, IS surveys, the internet, EDI, and video conferencing with our customers and colleagues. All of these channels generate comprehensive amounts of information. In 1993 our internal self-assessment program indicated that we were very good at collecting information and data. However, putting it together so that it could be used for improvement was a definite opportunity area for improvement. We decided that the best place to begin was with our customer.

Scoring Customer Satisfaction

In 1993 we implemented a program called Scoring Customer Satisfaction. Each area determined their customers expectations and implemented internal indicators to measure their success in meeting customer needs. This produced a definite improvement; however, we still had too many reports each month. So the question became: “How do we integrate all types of relevant information, performance data, and competitive information into a useful format?”

Our president, Steve Gagne, visited Dana’s Structural Component Group as a result of a Dana Best Practices Day in 1994. While he was there he saw how they integrated their information in the form of a war room. When Steve left that day he decided that DCC needed a simple, visual, one-page report with all of our critical measurements. The result is that we developed a one-page report, using data from a variety of sources, that we call the Scorecard (see Figure 7).

Figure 7. Scorecard: Customer Satisfaction

<table>
<thead>
<tr>
<th>SWOT</th>
<th>Customer Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reported Monthly</td>
</tr>
<tr>
<td>SWOT</td>
<td>Past Performance '92 '93 '94 '95 '96</td>
</tr>
<tr>
<td></td>
<td>Voice of the Customer</td>
</tr>
<tr>
<td></td>
<td>DCC Performance</td>
</tr>
<tr>
<td></td>
<td>Competitor/ Benchmark</td>
</tr>
<tr>
<td></td>
<td>Future Target '97 '98 '99 '00</td>
</tr>
</tbody>
</table>
The Scorecard is based on our customers' expectations and the performance indicators that are identified in the Scoring Customer Satisfaction program. Results obtained from customer and third-party surveys, and from our programs Scoring Customer Expectations, are combined into the Voice-of-the-Customer. However, without a comparison, those results alone can be misleading. Therefore, we decided to combine the information that comes from benchmarking and market intelligence, such as industry publications, third-party studies, customer surveys and our Scoring Key Competitors program, to compare ourselves to our competitors in relation to our customer expectations and performance level. Now we had a good basis for comparison. Yet there was still something missing to get the total picture. By adding historical data associated with all of the measurements, along with our future targets and goals, we were able to assemble everything we needed to begin a thorough analysis.

We use a SWOT analysis as a means for evaluation of the Scorecard measurements. Each month we compare DCC performance to the Voice-of-the-Customer and to our competitors' performance, assigning an S, W, O, or T for that month. All SWOT analyses are used as inputs to the strategic planning process, as well as for improvement of our overall business processes.

Summary

In summary, we have: (1) created a successful, decentralized product group organization that allows us to focus on our customers, markets and decision-making, and (2) a product group specific, one-page, visual report, with all critical measurements that allows us to aggregate all types of relevant information, analyze the data, and use it to support the strategic plan, process improvements and decision-making (Figure 8). When I look at the Scorecard organization it appears to be so simple. Yet I remember the pre-Baldrige days when information was delivered in the form of management, sales, and marketing reports, with occasional customer feedback, all in neat stacks to be reviewed—definitely not an integrated, systematic, review of the business. Our new, simple, (but not simplistic) format not only makes it easy to see an integrated picture of the business at a glance, it incorporates feedback from all aspects of the business and keeps us on track with what is truly important to our customers and our shareholders.

Figure 8. Summary: Strategic Planning and Information & Analysis
Human Resource Development and Management

Bruce Mullkoff—People are our most important asset. As a financial services company, we do not have a tangible product. Service companies are unique in that they manufacture and deliver their service product on customer demand. We acknowledge that our business results are only as good as the individual and collective efforts of our people. It's our people who create our service product at the exact time it's demanded by the customer, it's our people who are responsible for understanding the demands of those customers, and it's our people who must learn the ins-and-outs of the business well enough to represent the company. In this section, I'll describe our journey and highlight some of our people programs that have contributed to our business success.

Like many other companies, DCC faced many human resource management and development challenges in developing a high performance workplace, and aligning our people toward changing strategic directions. To squarely address these issues we chose an approach that focused on our three strategic business drivers: To be recognized in our market as first in quality, first in knowledge, and ultimately first in customer satisfaction, which should result in profits for our shareholders. Our business success would be dependent on creating an organization to achieve these objectives.

During the early part of the decade the competitive environment in the leasing industry made it difficult to compete as a generalist. Traditional niche markets were changing. Many of our customers were consolidating, or exiting the business. The industry was undergoing dramatic change, and DCC was forced to change as well. We thought we were doing a good job, but we wanted to do better in order to properly position ourselves to succeed in the future. We decided to do a cultural survey to provide insight for improvement in 17 areas related to the Baldrige criteria. In 1991 we conducted our first cultural survey. The results came back—very different from what was expected! In some locations the survey showed a lack of confidence in management effectiveness and leadership. Many saw communications as being poor. There were complaints about minimum opportunity to contribute, or for advancement. In all, our satisfaction was—at best—mediocre.

We initially had trouble accepting the results: The survey instrument must be flawed. The timing was wrong. The questions were unclear, misunderstood. Eventually we got beyond the denial stage and chose to act on the survey results. We developed a strategic partnership with our people and tackled the prominent issues that were identified. In 1996, our people satisfaction level improved from mediocre to the top quartile of all companies in America. How did we do it?

One of our key business drivers is knowledge, which requires knowledgeable people. A commitment to education demonstrated to our people that they are our most important asset, and that they are the key to providing value-added services and products. While the training needs are determined through a SWOT analysis, education is a part of the strategic planning process in each of our business units (see Figure 9). These overall training needs are supplemented with recommendations from our own education group, and from individual training plans developed by every DCC person during our annual performance appraisal process.
In recent years DCC has been in a hiring mode. This has created unique challenges. We knew that our success in the marketplace was dependent on our ability to instill the Dana Style into our new people, as quickly as possible. We achieve this knowledge transfer through a required group of four courses for all new people during their first 12 months of employment. The courses include: (1) Cultural Orientation, (2) Introduction to Leasing, (3) Uncommon Leadership (which is team-building), and (4) Scoring Customer Satisfaction (which involves individually identifying everyone’s specific customers and establishing measurements to monitor their satisfaction levels). These courses, and others, are taught by our internal education group, which offers more than 40 unique courses for DCC people. Each year they supplement this list in response to the business needs established by the product groups. Leadership training is provided through Dana University, where our cultural values are reinforced. We evaluate the effectiveness of training through the use of course evaluations, personal improvement plans, 90-day follow-ups, correlation analysis with productivity measures, and business success.

Our ability to affect our people’s culture, work systems, and well-being came as a direct result of fully utilizing the Dana Style. These cultural values are a shared set of beliefs among all 46,000 Dana people worldwide. The Dana Style forms the basis of our business conduct (see Figure 10).

Through the use of the Dana Style we are able to dramatically align our organization with those of our customers. At the same time we improved our people’s well-being and satisfaction. The Dana Style promotes innovation and participation. All Dana people are encouraged to submit ideas through our formal idea programs. We encourage
involvement from all of our people, teaching them that, “What do you think?” are the four most important words in the English language.

We recognize and reward success through a variety of recognition programs. For significant contributions, for example, we give our people Dana Stock Awards. Over 600 individual Stock Awards were presented last year. In addition, annual discretionary cash bonuses are used to recognize extraordinary contributions. Ninety-eight percent of our people received a cash bonus in 1996. Other public recognition is provided in monthly people meetings and in DCC newsletters. These examples of the Dana Style have been equally successful with DCC worldwide.

**United Kingdom office**

An ongoing challenge is that our 100-person workforce in the United Kingdom is located 5,000 miles away. We are very proud of the accomplishments achieved by this group. We use the Dana Style, which recognizes decentralization, empowerment, training, and focus on the customer. Our UK office decided to reorganize its people by moving from a traditional, departmental structure, to customer-focused teams.

Over 98% of our UK employees are directly aligned to the customer. A by-product of this reorganization is empowerment. People are more motivated because they have real ownership of the customer. When a customer calls, they talk—first time—to the person who can make decisions necessary to get the job done. This unique organization management of the UK sets us apart from our competitors.

The UK group developed a unique approach to team building when the senior managers attended a weekend training exercise in a remote part of southwest England’s moors. Relationships and significant improvements resulted. The new environment prompted an idea from one of our UK people. This was that everyone in the organization attend a one-company, one-team day, where groups of people who would not normally work closely together form small teams and work to overcome mental and physical challenges. This approach has proven to be an invaluable way of breaking down traditional barriers that may exist between teams, and continues to reinforce to us that the result of team effort is far greater than any individual effort.

So, you may ask, where is the hard proof that the Dana Style is positively impacting our UK business? This can be clearly demonstrated through the impact on bottom-line results. Assets per person have grown by 65% since 1992. SG&A cost, as a percentage of assets, has declined in each of the last five years. Profit after tax, per person, has increased by 33 times in the UK office from 1992 levels.

**Conclusion**

To conclude, we recognize the responsibility we have to maximize the potential of our greatest assets, our people! If we are to secure future growth, we must remember that the real limits are not money or opportunities. The real limits are good talented people, who can provide the leadership and support necessary to sustain growth.
**Process Management and Business Results**

Gregory Sting—Since we’ve discovered the benefits of quality management and good, sound processes, we do not wait for miracles to occur, but rather design and manage our processes to get the job done. It is our mission to exceed our customers’ expectations through innovation and delivery of quality financial products and services. Whether we are leasing forklifts, PCs, airplanes, or specialized industrial equipment, DCC has good management of its processes.

Process management has transformed DCC from a former state of chaos to a state of precision. It transforms customer focus into high quality products and services. Without this activity, we would never be certain of what the output to the customer will be. I will describe four areas in this section: process design, process management, support services, and supplier management.

1. **Process Design**

Good process design begins with customer focus. DCC includes customers in the design process through the use of a Consultive Sales Approach. Consultive sales is a process of value-added selling, whereby a custom product is developed specifically for the customer’s need to help improve profit (see Figure 11).

![Figure 11. Consultive Sales Approach](image)

Through this approach we are able to identify and prioritize our customer’s needs and requirements. DCC forms ad hoc customer transaction teams to accomplish this. These teams are cross-functional, cross-product group, and vary in their complexity, depending upon the requirements of the customer. These teams often include members of DCC’s marketing department, tax department, IS legal staff, and accounting department. They work closely with customer and suppliers to research a working design.

This team is empowered to design a process that will satisfy both the customer and Dana shareholders. As a result of knowing the customer’s requirements and priorities, the transaction team will include measurement points from the process to monitor success. The team will present potential solutions to the customer until the appropriate service is approved.

DCC is extremely flexible. We will custom-fit a service to meet the customer’s needs. We can do this because of our unique structure of small, responsive product groups that are focused on a particular niche.
But designing processes takes more than empowerment and hard work. It also involves knowledge. To strengthen our knowledge of the leasing industry, DCC in 1990 launched its own education group that delivers courses that help us understand our processes. The courses help us to design truly customer-focused service. Once the design has been approved by the customer, it is put into effect.

2. Process Management

From the beginning, measurements are taken and recorded to ensure acceptable performance. As you know, process management is the maintaining and improving of a current process. So, how does DCC do it? Our improvements come from listening to our customers, benchmarking, taking surveys, entering state quality competitions, and participation in the Dana Quality Leadership Award process, or DQLA for short.

DCC’s evolution of process management started with a customer call. For me it began about four years ago when I went on a sales call to one of my larger customers with Jim Beckham, our Director of Quality. Prior to this visit, we had prepared a macro flowchart of the key services that we were providing to this customer. For two hours, in a consultive sales fashion, Jim and I met with the customer. We asked them to rank each service in terms of overall importance, and to rate our performance in each area.

On the trip back home, Jim and I were shocked at how much we had learned. Although I thought I knew what the customer wanted, I was amazed at how wrong I was. This customer had several primary requirements that I had considered to be secondary. When we got back to the office, we formed a customer transaction team so that improvements could be made. A gap analysis was done to emphasize where we should focus first. Seeing the value of this exercise, we have made continuous improvements to it. Today, we call it Scoring Customer Expectations (see Figure 12).

Utilizing this approach, we collect competitive information, improvement ideas, and opportunities directly from the customer. This information is taken back to a customer transaction team for improvement. Our experience in conducting these sessions has proven to be beneficial, and customers are eager to participate in a process that will improve their own bottom line. Often the changes are subtle, but at times DCC had to revolutionize the entire service. A key example of how DCC had to adapt to changing customer requirements, is a recently offered life-cycle management service. Three years ago DCC began hearing from a few of our customers that they desired a way to better manage their IT assets, but they did not possess the resources, nor did they have the desire, to do it themselves.
At that same time we used our strategic planning process to develop such a service. The result was that in 1995 DCC started its Technology Management Group. The core is a team of people previously known as Benson Software, that produced WYZDOM®. WYZDOM® manages a company's computer assets and is now an integral part of DCC's solutions to those customers requiring asset management services.

Information gained during the Scoring Customer Expectation process is invaluable. It provides the baseline for our measurement and maintenance system. The top five customer priorities are tracked on our Customer Scorecard. A Scorecard is maintained for each and every niche of our business. Sometimes there is a Scorecard for a specific customer, while other times the same general types of customer are tracked on one Scorecard. These Scorecards track our monthly performance and competitors' monthly performance. Information on the Scorecard is reviewed at least monthly by all departments. To help relay the information to all the DCC people, there are bulletin boards set up around the company with Scorecards and related charts.

If our performance falls out of control, we have a five-step Scoring Customer Satisfaction process that helps us interpret the information on our Scorecards and take corrective action. All DCC people attend a one-day class taught by our education group, entitled Scoring Customer Satisfaction. This course lends a better understanding of our Scorecard concept and helps them manage their own processes.

Another method that DCC uses to maintain and improve processes is our process certification program. This program was fashioned after one of Dana's divisions, the Parish Frame Division, and also Hayworth Manufacturing. Hayworth was a 1994 recipient of the Michigan Quality Leadership Award. Through this program all new DCC processes fall under one category. As the process matures, and is refined, it moves up the scale: bronze, silver, gold and presidential. Documentation level, benchmark comparisons, competitive comparisons, improvement trends, and many other factors contribute to advancing a process.

Support Services

Support processes play an important role in our final service to our customer. Because DCC is a service company, our support processes are very similar to our production ones. Many of the support people are on customer transaction teams that are involved in the initial design of the service. Additionally, there are teams such as the IS Steering Committees, that are made up of both support and non-support people.

This integration of support and production people creates an environment where the two disciplines work well together. Like our production and delivery processes, support processes are managed under the same guidelines. We use industry standards, benchmarks, best-in-class comparisons, third-party surveys, and various other sources of comparisons to ensure that our support services are optimal. DCC Support Service Groups also conduct internal customer expectation sessions, and plot their results on their own Scorecards. They also use the Scoring Customer Satisfaction process to...
evaluate and improve their own level of service. DCC readily recognizes that our support services have equal importance to our ultimate deliverable ones.

**Supplier Classifications**

DCC is somewhat unique in that our suppliers do not fit the conventional mold. We have classified them into one of three categories: strategic, support, and commodity.

Strategic suppliers are key suppliers, an integral part of the final product that we offer customers, and they are one of two types: a financial institution or a law firm. To give you some sense of what this means, interest on borrowed money from financial institutions is our largest expense. It accounts for 83% of our total supplier expense. Support suppliers include overnight carriers, commercial credit report services, and information services. Although these are important, they're very similar in nature and limited in selection. Commodity suppliers are suppliers of non-critical things such as office supplies, travel services and other miscellaneous items.

Because of the significant role our financial suppliers play, DCC works closely with them. We have several performance requirements that we measure, and we also compare their cost of funds to two industry standards: Commercial Paper and London Interbank Offered Rate, also known as LIBOR. Reviews of these measures are done four times a year when our CFO and Treasurer meet with our strategic financial suppliers.

We work very closely with our law firms also. The Dana Corporate Legal Department provides two on-site attorneys to coordinate legal work done by outside law firms. Although our requirements are somewhat subjective, we have pre-defined criteria we use to qualify them, and there are several preferred law firms that have passed our qualification measures. These law firms, through communication with our on-site attorneys, are involved early in the design stage of our deliverable product and service. Feedback on their performance is accomplished through DCC’s resident attorneys. Excellent performance from these suppliers is essential to DCC and its customers. Working closely with them is the best way to guarantee that the output is one of quality.

**Results**

- A critical area of performance for our Dealer Products Group is the time it takes to approve a customer’s credit. Since 1992, we have cut the time in half almost five times. We can now approve credit in only 3.8% of the time it took five years ago.

- Our Material Handling Group has also seen some significant results. They can now quote new equipment in only 7% of the time that it took them just four years ago.

- A result that illustrates the effectiveness of our efforts is the amount of leasing business that we do as a result of innovative and new services. This volume has climbed over 250% since 1992.

- We take our processes seriously, but we do have fun doing it. Unlike the state we were in a few years ago, where we were waiting for miracles to occur, we now strive to never make a dud!
Customer Focus and Satisfaction

Phil Silva—The key to our future success lies in our ability to actively and intently listen to what our customers are saying. We have developed a series of processes to ensure that we sensitize ourselves to all of the needs, desires, and complexities crucial to true customer focus. Satisfaction is then the end result or by-product of these continuing processes. The processes continue to be improved, but it is our customers who change the process, not DCC.

Customers are demanding today. They want their partners to be dependable, flexible, timely, committed to excellence, able to turn on a dime, and to propel innovation. It is exhausting, far-reaching, and most of all, it is necessary. This is their requirement, and it becomes our mission (see Figure 13).

Figure 13. Key Customer Requirements

- Dependability/Flexibility—Complete transactions our competitors cannot.
- Timeliness—Close transactions on time, every time.
- Commitment—Complete transactions as agreed.
- Innovation—Provide innovations, state-of-the-art lease products.

Our Consultive Sales Approach relinquishes control of the sales presentation. It requires that the canned sales presentations go by the wayside. The value of eloquence has depreciated with the new fixation on customer needs and desires.

To unleash these desires, both the salesperson and the company must actively listen to what their customer is saying and wanting. The focus must shift from spiel to interlinking fact-finding with an intent to extract intrinsic company desires. Customers do not necessarily come with the desire to find out who has the best program, but rather are looking for a vendor to partner with them. They want to align themselves with a company that shares similar aspirations. The customer focus and satisfaction process must continue to evolve, cycling through a never-ending process of prioritizing, identifying, and extracting feedback. The end result is a relationship structured on our customer's financial, sales and marketing objectives, while aligned with our own as well.

Communications Day—First Friday of the Month

About two years ago, we received some news that we did not want to hear. We had pursued a prospect for five years without success. He represented one of the largest computer resellers in the Southeast and a lot of potential leasing volume to DCC. The relationship had progressed to where we had developed a friendly rapport with him; when we called him again to see if we could secure his commitment, there was a silence that seemed to span minutes. When a salesperson addressed him again, he reticently replied that he had not heard from us in a while, that he had changed leasing companies, and that the ink was still not dry on the agreement with our main competitor. He...
Customer focus and satisfaction, continued

went on to say what amounted to: “Out of sight, out of mind.”

We then decided to be in touch with our top prospects and customers on a monthly basis. The result: Communications Day. Communications Day was designed for us regularly engage our top prospects and customers on a monthly basis. It reconciles and balances new customer origination with existing customer penetration. Each of our top prospects and customers are called on the first Friday of each month. With the fast pace of business today, most conversations are transaction- or deal-oriented. Communications Day helps us elevate the level of a business relationship beyond the individual transaction. While generic in definition, the objective is to inject and retrieve new information as well as create the forum for dialogue and open conversation. Communications Day is proactive, customer-centric, rather than the reactive “me too” affliction of many business relationships today.

Scoring Customer Expectations to Evaluate Our Past Performance

Scoring Customer Expectations is designed to measure us against our competition, as well as our customer’s expectations. This process is conducted face-to-face in our customer’s office on an annual basis, and is the framework for correcting, improving and innovating key DCC accounts. Scoring Customer Expectations, a seven-part process, is also used in other aspects of DCC. Figure 12, in Process Management, lists the seven parts of the process. Figure 14 (below) shows a summary of customer satisfaction scores in our Dealer Products and Capital Markets Groups.

Figure 14. Customer Satisfaction

Primary and secondary market research helps us part of the way. This information is used in tandem with processes, such as our complaint data and customer surveys, to assist us in identifying areas that we need to improve. This is systematically documented and followed-up on by our complaint management teams. It is a painstaking process, but is required to continually improve the quality of product that we provide to our customers.
Customer focus and satisfaction, continued

customers. The information is disseminated by product group and distributed to the DCC point of contact closest to our customer with the intent of reaching resolution.

We are continually challenged with removing the mystery. Facts must replace hunches, data must impact decisions, analysis must work in concert with a handshake and a relationship. Through the use of primary and secondary market research and Voice-of-the-Customer and Customer Surveys, we have teamed the academic with the realism of actual customer feedback. This information is further enhanced with our internal company measurements, such as our complaint data, and top-100 customers report. The refined data then feeds directly into our strategic planning process. There, analysis is conducted on a global and product group basis, and used to implement business decisions. It is then remolded, and reshaped to further envelop our customers in producing a meaningful product that positively impacts our customers’ and DCC’s mutual success.

Nothing will ever replace the impact and significance of sitting in front of your customer. As with any meaningful relationship, honesty and forthrightness spur communication. Our field sales people meet with our top customers on a quarterly basis. The objective is to monitor and measure existing programs, innovate new ones, and bring them the market. Our senior executives are also active in this process, strengthening relationships while exchanging market information from a big picture perspective. The intent is to elevate the level of a relationship beyond the individual transaction to a higher plane. Key customer input is secured and finally, all of this information is added to our proprietary contact management system, and made available to all in our organization.

I recently had the opportunity to meet with the principals of a customer in Texas with whom we had done business for eight years. As we sat in their conference room prior to our quarterly meeting, their CEO looked me straight in the eye and said, “We have very much appreciated our relationship with Dana Commercial Credit. You were there when we were small, and you were there when we needed your assistance in growing our business. You can count on us also being there for you in the years to come.” I’ll remember that conversation for a long time. That image of customer focus is what we strive for every day and with every relationship at DCC.

Conclusion

In conclusion, we must stay in touch and in front of our customers. Senior executives, middle managers, and support personnel must be placed in our customers’ laps. There is nothing like the experience when a customer says that you are not meeting his or her expectations. This is sobering, maddening, but most of all it’s exasperating. But therein lies the true opportunity. If you regroup and actively listen to what your customer is saying, the makings of a long-term relationship, based on both company’s objectives, will present themselves. Of course, these processes and measurements are expensive. The cost of true customer focus is very expensive, but how expensive are wrongly navigated “gut calls,” and the opportunity costs of a lost customer?
Quality Journey and Lessons Learned

**Figure 15. Summary Chart of Lessons Learned**

<table>
<thead>
<tr>
<th>Strategic Planning Process</th>
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<tbody>
<tr>
<td>• Align organization with customers.</td>
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<tr>
<td>• Focus first on process effectiveness and efficiency will follow.</td>
</tr>
<tr>
<td><strong>Education Group</strong></td>
</tr>
<tr>
<td>• Education empowers people.</td>
</tr>
<tr>
<td><strong>Annual Quality Process</strong></td>
</tr>
<tr>
<td>• Organize into improvement teams, not category teams.</td>
</tr>
<tr>
<td><strong>Scoring Customer Satisfaction</strong></td>
</tr>
<tr>
<td>• Service measures are hard to define.</td>
</tr>
<tr>
<td>• Lead with education.</td>
</tr>
<tr>
<td>• People set higher goals than management would have set.</td>
</tr>
<tr>
<td><strong>Process Management</strong></td>
</tr>
<tr>
<td>• Align process with customer expectation.</td>
</tr>
<tr>
<td>• Focus first on process effectiveness and efficiency will follow.</td>
</tr>
</tbody>
</table>

**Develop individual business plans**

James Beckham—Our “promote from within” policy stresses that having people who know how to get things done in the organization can be more important than the individual’s own experience, and that the organization, as a whole, can be greater than the sum of its people.

In 1991, we acquired a leading lease education group, who then proceeded to develop our strategic planning process. At the time we had six different product groups, or business units, each focused on their customers and market segment. Rather than develop one all-encompassing plan, our decentralized style of management dictated that we develop one plan for each of our product groups, whether they had 18 people in them, or 180 people. Each product group identifies and develops their own goals and plans, which are then reviewed by all senior managers. This bottom-up, goal-setting approach was so unorthodox that I don’t think the Baldrige Examiners believed it at first. Then after a few days of seeing it, I think they began to think that we were paradigm breakers instead.

**Education empowers people**

Knowledge became a competitive advantage for us. For example, we spent a considerable amount of time teaching financial concepts to our collection people, so that they were better able to make a decision on whether to waive fees for our customers.
Quality journey and lessons learned, continued

Lead with education

As part of our SWOT analysis during strategic planning, we'd identify people as our primary asset that needed to have an ongoing investment made, in order to keep their knowledge current. Out of that analysis came the idea for creating our education group. Our educators adapt courses from Dana University, such as Process Mapping, and Problem Solving. But more importantly, they develop courses specific to our lease service business. We focus on technical courses such as tax, law, finance, and accounting—the basics for the leasing industry.

Quality Award Applications

To develop our internal Baldrige application to the Dana Quality Leadership Award, we conducted self-assessment classes with two to six people from each of our product groups to learn the Baldrige criteria. As part of that they met other DCC people. They would start with one day of a case study, and then we switch to our current-year Dana application, which they critique. And by doing so, they learned about Dana Commercial Credit, and validate the deployment of our approaches.

After our first self-assessment class, we mobilized every person to evaluate every product group for all seven Baldrige categories. Groups of people storyboarded what their product group was doing well, what they weren't doing so well and, finally, how they knew if they were getting better, that is, what they were measuring. That exercise proved invaluable to us as a service company because we found we measured everything financial, some things related to productivity, but virtually nothing from a customer perspective. The result was that we laid the groundwork for our Scoring Customer Satisfaction program. By involving everyone, and having all senior managers on board, our initial self-assessment was taken seriously.

Now, every year we submit a 50-page, Baldrige-type application to the Dana Board of Examiners. Eighty days later, we receive a feedback report with scores by item and category. Our cross-functional, cross-product group division quality council analyzes the areas for improvement and looks for common themes across the categories. We then compare our needs to what all of our product groups require.

Organize into improvement teams, not category teams

That first year, we realized we didn't have the resources to do everything. And more importantly, not everything in the feedback report had to be addressed if we thought it was okay from a business perspective. Initially we organized into seven category teams, based upon the Baldrige criteria. We found that due to strong linkage among the categories, the teams sometimes tripped over each other's efforts, and the business results team was always waiting for something magical to happen. The second year into this process, we switched to project improvement teams which were focused on a particular area for improvement. And of course, we eliminated the business results team. Figure 16 shows a flowchart of this annual process.
Using this approach, we were the first Dana division to move every year from the bronze level, to the silver, to the gold. More importantly, we found that we had a positive correlation among all our key business drivers. People survey results improved dramatically. Our internal process measurements exceeded competitive comparisons. Repeat lease volume from customers increased, which generated additional profits to the bottom line. In short, we had positive reinforcement that this approach made sense. Our Scoring Customer Satisfaction program has been a key improvement area for this change.

Figure 16. Annual Quality Process

Service measures are hard to define

I’m sure you’ll agree that it’s relatively easier to identify what’s measured in a manufacturing environment, but it can take time, manpower, and capital to make improvements. In the service business the problems are somewhat reversed. Service companies typically will stall when it comes to defining a measure that represents what’s important to the customer, but once identified it can be easier to improve. To address these issues, every person in DCC attended a one-day education class on Scoring Customer Satisfaction. Each person completed a pre-work assignment to define who their customer was, what was important to them, how they knew that, and what they could measure to internally monitor them.

People set higher goals than management would have set

People attended as a functional unit—as a team or department. During the morning, they learned about what other successful service companies did to measure, and in the afternoon they developed their own measurement plans for their department. This form of educational empowerment was most beneficial, since people established goals more aggressive than managers would have. And since they were their own goals, they aggressively made improvements in them.
Align process with customer expectations

Originally we implemented process management back in 1992 when the Dana Quality Leadership Award program was started. Back then, we focused on making processes more efficient. That is, reduce a 100-step process down to 95 steps. After the Scoring Customer Satisfaction program was established, we reintroduced and reemphasized process management. Functional teams or departments—process owners—attended the class as a group, sometimes inviting customers or suppliers. The new emphasis identified those two, three, or four points in the process which touched the customer. The Scoring Customer Satisfaction measurements helped focus the process review. If a 100-step process needed 20 additional steps to deliver on customer expectations, then that’s what the process owners did!

In 1995 we decided to apply for the Michigan Quality Leadership Award to benchmark the Dana process. To do so, we took our 1994 Dana application, put a different cover on it, and submitted it. We were glad to receive a site visit, and we were very surprised to learn that we not only won it but we were the sole recipient that year. It was gratifying because everything we had done had been to improve the business. We didn’t do anything special to win an award. It was just business as normal, every improvement done because it made good sense. After winning the Michigan Quality Award, several people such as Dr. Kurt Reinman from the Baldrige office and Bill Kalmar from the Michigan Quality Council suggested we apply for the Baldrige Award. By applying, we hoped to achieve three objectives.

1. First, we hoped to receive a site visit so as to have an external view of our business. And we truly appreciate the seven examiners and the NIST official who gave their time, minds and energy to provide us with a road map for our future improvement.

2. Second, by getting ready for a potential Baldrige site visit, we would create a sense of urgency and accelerate our improvement efforts which would further improve our profitability.

3. Finally, we’ve compared both the comments and the scores from the Baldrige feedback report to our 1996 Dana feedback report, so as to benchmark and calibrate the Dana Quality Leadership Award process. And we were glad to see similar strengths and areas for improvement between the two.

Since winning the Baldrige Award, we have done a lot of sharing of our leadership, management and work practices. Even though it’s a requirement of Baldrige to share, people will ask why, in a competitive marketplace, we are willing to tell others about our processes. I can respond by saying that we feel like one of Dana’s Excellence in Manufacturing teams which traveled to Japan back in the 1980s. At that time, our transmission people visited a Japanese transmission company and were taken on a tour of the facility. At the end of the tour, our Dana person asked the Japanese representative, “Why are you showing us this? After all, we’re competitors.” And the Japanese person just smiled and said: “Because next week it’s going to be different.”
Thanks to the Dana Quality Leadership Award process, at Dana Commercial Credit, our people will find a better way tomorrow.

Author information

Edward Shultz, Chairman and CEO, began his career with Dana Corporation in 1969 as an internal auditor. In 1981 he began the leasing company which later became Dana Commercial Credit. A Certified Public Accountant, Shultz received a bachelor’s degree in business administration from Bowling Green State University and has completed Harvard’s Advanced Management Program.

Kevin Moyer, President of Capital Group, began his career with Dana Corporation in 1980 and assumed his present position, overseeing both large and middle ticket operations, in 1994. Moyer holds a bachelor’s degree in business administration from the University of Findlay and a MBA degree from Bowling Green State University.

Donna Marie Lilly, Manager of Quality Initiatives, joined DCC as portfolio manager in the collections department in 1985. Her current responsibilities include the development and coordination of quality initiatives for the Dealer Products Group. Lilly received a bachelor’s degree, magna cum laude, from Siena Heights College.

Bruce Mullkoff, Vice President, Human Resources, joined Dana Corporation in 1978 as industrial relations manager, transferred to DCC in 1987 as division human resources manager, and was promoted to his present position in 1991. Mullkoff earned a bachelor’s degree in economics and a master’s degree in organizational behavior and industrial relations from the University of Michigan.

Gregory Sting, Transaction Manager, Asset Management Services (AMS), joined DCC in 1991 managing retail operations, and was promoted to transaction manager in 1993. Sting earned a bachelor’s degree in business administration, magna cum laude, from Heidelberg College.

Phil Silva, Vice President, Field Sales, joined DCC in 1987 as a field salesman based in Kansas City, was promoted to national account sales manager in 1991, and was named vice president of field sales, responsible for the Dealer Products Group. He holds a bachelor’s degree in business management from Whitworth College.

James Beckham, Director of Quality, joined Dana Corporation in 1986 and has held a variety of information systems positions ranging from computer programmer to manager of systems development. He assumed his current position in 1993. Beckham holds bachelor’s and master’s degrees in business administration from Bowling Green State University.