JULY/AUGUST 1997
VOLUME 13
NUMBER 4

# Facilities Manager

The official publication of APPA: The Association of Higher Education Facilities Officers

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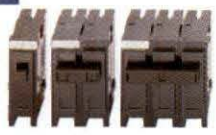

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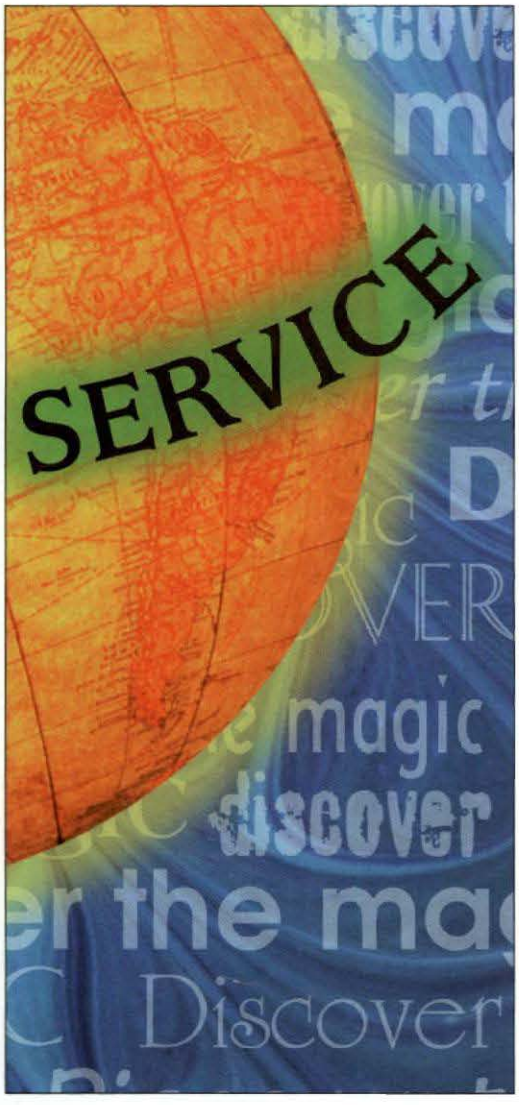


Facilities Manager
The Official Publication of APPA: The Association of Higher Education Facilities Officers

Volume 13 Number 4 July/August 1997

# Features



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Facilities Manager

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**Facilities Manager** (ISSN 0882-7249) is published six times a year (January, March, May, July, September, and November) by APPA: The Association of Higher Education Facilities Officers, 1643 Prince Street, Alexandria, Virginia 22314-2818. Editorial contributions are welcome and should be sent to this address.

Of APPA's annual membership dues, $40 pays for the subscription to ***Facilities Manager***. Additional annual subscriptions cost $48 ($60 for non-U.S. addresses). For information on rates and deadlines for display advertising, telephone 847-562-8614 or 703-684-1446 ext. 238.



POSTMASTER: Send address changes to Facilities Manager, 1643 Prince Street, Alexandria, VA 22314-2818.

# From The Editor

*Steve Glazner*

## World Class

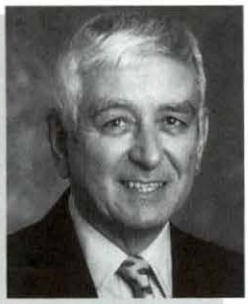
Service is our theme for this issue of *Facilities Manager*, following the theme of APPA's 1997 Educational Conference and 84th Annual Meeting, held July 13-15 in Orlando, Florida. The strong slate of educational sessions, including the special Disney University presentations on service and management, reinforce this message and make the annual meeting one of the most focused in recent years.

In this issue we address World Class Service in a number of ways. Bob Casagrande reminds us why we're in the facilities profession in the first place—to be a part of the learning process for the students thirsting for knowledge and anxious to make a difference in the world. Our own thirst for knowledge, and our application of what we learn, aid and direct us in our own efforts to make a difference at our institutions, in our community, and the world at large.

Jay Klingel shares a dynamic case study of how the University of Virginia's facilities management department entered into an academic partnership in which business school students evaluated the pros and cons of zone maintenance. The results were beneficial for all parties involved (including the students, who received real-world experience), and the program serves as a model of cooperation and resource utilization.

Gene Garrison tell us how Michigan State University refurbished its bus fleet with extreme budget limitations and expanding needs. Chip Ray describes the concept and value of statistical process control, and Mike Ellicott and Rod Conard explain the "service excellence model" implemented at Harvard University recently. Cary Buckley and Dave Petersen share the success of Fairfax County Public Schools in Virginia in increasing and enhancing custodial services by adopting a team cleaning approach and changing the types of equipment used for cleaning in the heavily used school system.

Finally, I urge you to read Wayne Leroy's Executive Summary column, "What Makes World Class Service?" His insights and suggestions are valuable reminders that we live in a service environment, and that we must constantly strive to improve our value and accountability to the institutions and people we serve.



***President-Elect Thomas F. Vacha***
***University of Delaware***

There are three main topics I'd like to discuss in this annual report: finances, the President's term of office, and regional representatives to APPA committees.

***Finances.*** At the midyear Board of Directors meeting last February, the Board approved a revision in the dues structure associated with the method we use to keep our income in line with increases in the Consumer Price Index (CPI). The primary concern is that some of our larger expenses increase at percentages higher than the aggregate CPI percentage, causing APPA to lose ground and requiring us to impose a larger-than-average increase every few years. A second result of the Board's action was to create a small surplus so that we could start the process of rebuilding our operating and building reserves. I supported this action, and during my term as President I will impose the appropriate level of financial discipline to make sure the planned "surplus" does not erode away as a result of program "creep."

***President's Term.*** During the month of March 1997, there was a good deal of discussion on APPA's Leadership listserv on the Internet regarding the length of the term of office for the APPA President. The responses from those expressing a desire to keep the term limited to one year had a very compelling reason: many thought that if they were "signing up" for a two-year term, their organizations might be reluctant to allow them to run for the office. From those who have served as President in the past, there is no question that the time commitment is substantial. The Internet discussion was healthy and succeeded in letting members express their views on the topic. From a broader perspective, the concept of having a vehicle to conduct such a forum is a giant step forward for APPA. It provides the Board members and the APPA officers with the pulse of members' opinions and concerns.

***Regional Representatives to APPA Committees.*** Having observed the selection process last year and having been involved again this year, I'm convinced that we need to consider implementing a change in the timing of the process. It might be more helpful to bring the identification of committee replacements—for those whose terms expire in July—more in line with the regional meetings held the previous September or October, or perhaps during their midyear meetings as well. Presently we ask for the names by May 1, which comes between the more formal meetings held by the regions. As I attend this year's round of regional meetings, I will ask the leadership to consider a revision to the timing of this annual activity.

***Immediate Past President Douglas K. Christensen***
***Brigham Young University (UT)***

# The eleventh hour of

my service as an APPA officer is quickly coming to an end. What a wonderful opportunity it has been to work on the current challenges facing APPA and our profession. A look back reminds me of the first executive committee meeting where the results of an independent evaluation of APPA were presented. The staff and volunteer leadership each studied the recommendations to collectively raise APPA to a new level of function. There were a lot of issues that needed careful review and recommendation, which started a new opportunity to improve APPA. With Wayne Leroy as the new staff leader, a new team focus, and the volunteer leadership, together began a process of more adequately meeting the needs of the members and stakeholders of APPA.

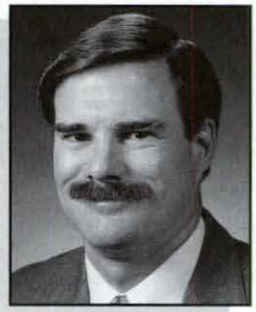
As needs were turned into reality, the results of a lot of effort have produced a better focused, customer-centered, business-driven, quality approach to meeting the needs of the members. Our vision is to become a *Global Partner in Learning.* This new vision is helping us better define what APPA is about. There is a lot more to learn about participating in a global environment than simply higher education. Our continuous improvement process will help assure that our limited resources will be focused.

The burden is that all stakeholders of higher education facilities management must give I.N.P.U.T. to the process of change to be assured of meeting current needs. The burden for the APPA staff, officers, and Board will be to ensure that I.N.P.U.T. to continuous improvement works in a timely, cost efficient, and quality way. The test will be to see how flexible and responsive the APPA team can be to change. It will take all of the leadership skills and strengths to make this effective. It will require more insight as to what the real needs are. The past can only be a view of the path we have followed so far, and not of the road ahead.

APPA leaders must seek to know the needs of the stakeholders or fall from the ranks of a value-added partner for the future. We must approach this future as a total effort to find ways to meet the needs being created by change. An important part of this effort will be to find ways to communicate and seriously consider the issues of the stakeholders.

The past few years of effort have brought to mind how much further we need to go. APPA is in a better position now to meet the needs of the facilities professional in higher education than it has ever been. The current and future leaders of APPA and the staff need to know what your vision of the future is. What is causing you to change? And are you prepared to meet the future? Let's all find a moment to ponder what some of our most critical needs are. Then see what a devoted group of facilities professionals in higher education throughout the world can do to help you. I can promise you that your most critical needs are shared by others. Your I.N.P.U.T. will lead APPA to become the association of choice and reach our vision as a Global Partner in Learning. Test the system, and discover for yourself the added value of APPA: The Association of Higher Education Facilities Officers.

Thanks for the wonderful opportunity to serve you. It is truly a highlight of my life.



***Vice President for Educational Programs Gary L. Reynolds***
***The Colorado College***

# The Education

Committee has made considerable progress this past year. APPA's strategic plan, objectives, and initiatives are providing guidance for these efforts with the two education objectives of:

1. Increasing meaningful participation and involvement of APPA stakeholders.
2. Providing all APPA stakeholders equal access (in terms of convenience, cost, time) to educational/learning opportunities.

Perhaps one of the most important and exciting developments to come from the Education Committee and the APPA office in several years is the Partnerships in Educational Training Series. This drive-in style training program uses APPA's connections with speakers on topics of importance to our members plus APPA's expertise in organizing programs. The PET series will allow members to participate in a half-day seminar on a very targeted topic right in their own neighborhood at a minimal cost per person. The topics have been chosen, the faculty have been identified, and several pilot programs have already been given. An aggressive marketing campaign is being designed and a major roll-out of the program will occur at the annual meeting. As members we have been asking APPA to provide its educational programs in a less expensive format. This is it! Low tuition and minimal travel

*(cont. on p.7)*

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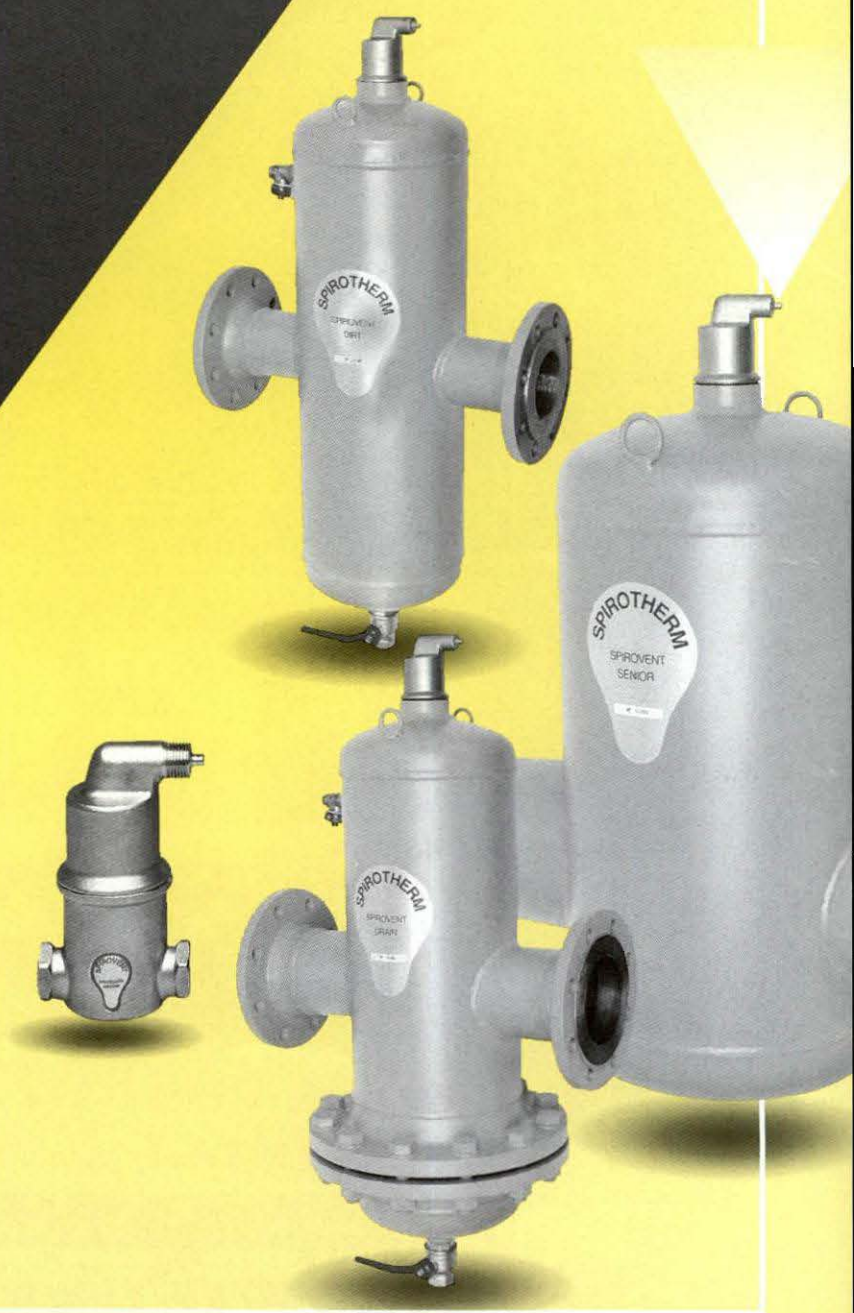


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(cont. from p. 4)

costs, combined with a face-to-face educational experience, is exactly what we've been waiting for. Please take advantage of this new program and host a seminar in your region.

And the excitement continues. The Institute for Facilities Management is undergoing a substantial overhaul. Over the past five years it has become clear that many changes in our profession were impacting the Institute. Many important issues were not being presented due to the lack of time; some of the current courses were redundant or no longer relevant in their current form, and expectations for quality presentations were rising. As a result, a complete curriculum review was undertaken. The review started with a weekend retreat in May 1996 in Alexandria generously sponsored by Cutler Hammer and Stanley Consultants, Inc. The result of this review is a proposed new format that will be four weeks long, rather than the current three weeks, and will include entirely new courses in administration, operations and maintenance, capital projects, and utilities. In addition, the Institute subcommittee has implemented access to the courses in a more flexible and personalized way. The redesign is now complete and will be offered at the January 1998 Institute. A major marketing campaign is being prepared for the annual meeting and the September Institute to announce the new design and to educate our members on the significant changes.

While the annual meeting has provided APPA's members with a number of educational and networking opportunities, lagging attendance indicates that we are not fulfilling our members expectations for the meeting. The leadership of the regions are doing an excellent job of providing quality experiences at the regional annual meetings and these excellent programs are meeting the needs of many of our members. The challenge to the APPA Education Committee and APPA staff is to explore the role of APPA's annual meeting in providing a distinctly different and value-added experience not available at the regional level. The Education Committee is making this a high priority issue. At this year's annual meeting, we are implementing the first of several changes in the exhibit hall that will provide educational opportunities for our members, and we are renaming it the Learning Resource Center. A combined regional meeting with presentations by regional officers has been implemented to allow regions to share ideas. Special educational sessions have been designed to take advantage of the location of this year's meeting.

The preliminary review of APPA's leadership programs has been completed and an exciting new proposal for a leadership institute series of programs is being developed. The program will provide leadership educational experiences in the three broad areas of personal development, organizational development, and development of the profession. The current leadership programs provided in cooperation with the Covey Leadership Center and the University of Notre Dame College of Business Administration will be incorporated into the new leadership series in an integrated and coordinated program that will address the three areas of development. The program will also include a creative component requiring a presentation at an annual meeting or writing an article for *Facilities Manager* and participation in a mentoring program in order to graduate.

This past year APPA's traditional programs have continued their excellent performance. For the first time the Institute for Facilities Management was offered in September (rather than August), and an informal poll indicated that

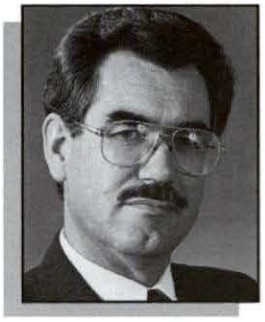
approximately 15 percent of the attendees were there because of the change in time. January's Institute in Miami was well attended and met expectations for a January Institute, but it fell a little short of the higher expectations we had in thinking that Miami would be a bigger draw.

Our leadership programs continue to do well. The Foundations of Leadership program was offered at both Institutes and was well attended and received high marks from the attendees. It continues to be supported by Marriott Educational Services. Future plans include an APPA license from the Covey Leadership Center allowing the program to be delivered by our own members thus lowering the cost and improving its relevance to the facilities management profession. The Institute for Facilities Finance was offered in November and was well attended and continues to receive strong reviews. The revised Notre Dame Executive Institute was offered again this past April and was well attended and received very high marks from the attendees. Tuition for this program was substantially raised but did not seem to affect attendance.

Several special topic seminars were offered this past year with mixed results. These seminars will continue to be reviewed with the concept that the PET series will ultimately replace them.

A number of partnerships are being explored with NACUBO, CAUBO, ACUHO-I, AFE, BOMI, PGMS, and CSI. APPA is exploring the sharing of faculty, programs, mailing lists, and other information in ways that could be beneficial to both organizations and higher education in general. As these partnerships develop, information will be provided to our membership.

This past year has been busy with much still to do. I am excited about the progress we've made and the direction that APPA's educational programs are going. The response from the volunteers and APPA staff has been tremendous. I'd like to take this opportunity to personally thank everyone for their efforts, and I look forward to working with them this upcoming year.



***Vice President for Information Services Pieter J. van der Have University of Utah***

I am pleased to offer this report of projects and programs for the past year.

### Publications

We are pleased to inform you of a number of important publications which will be available to you in the near future! For example:

1. The fully revised third edition of the *Facilities Management* manual will be available at the annual meeting in Orlando. Nearly 100 facilities professionals contributed to the 67 chapters in this four-volume set. Each volume will be available separately, or you may purchase the full set in an attractive slipcase. The manual's four volumes correspond to the four core programs of the redesigned Institute for Facilities Management.
2. *Successful Funding Strategies for Facility Renewal,* a case studies publication that complements *A Foundation to Uphold,* is due to be published this summer.
3. A benchmarking primer (see explanation further into this article), an important supplement to the Strategic Assessment Model, is also scheduled for publication.
4. The revised, second edition of *Custodial Staffing Guidelines for Educational Facilities*, with accompanying software, will be available in the fall of 1997.

### Strategic Assessment Model

Humphrey Bogart never said, "Play it again, Sam," in the classic movie, *Casablanca,* but that has not prevented us from saying it. The Information Services Committee took its assignment seriously when the Board told it to "breathe life into this project." Thanks to APPA President Ron Flinn, who supported us in both words and action (money for a meeting), we were able to bring together most of the original consortium late last fall. We had a healthy two-day discussion regarding our Strategic Assessment Model (SAM). We picked it apart item by item, relying on the results of the beta test survey sent previously. Maggie Kinnaman described the early evolution of SAM in her excellent article "Benchmarking with APPA's Strategic Assessment Model," published in the January 1996 issue of *Facilities Manager.* As she pointed out, we have had to look at this model with a very flexible perspective. The ranges for the five levels and strategies had to be adjusted, some of the terminology and definitions had to be modified, certain data questions were eliminated (i.e., cost/gsf), and a few others were added. As we have indicated in previous communications, we initially identified a fairly long list of core values, not all of which could be included in the original versions or the second revision of the survey form. We are now reaching a little further into that list, encouraging participants and other respondents to stretch themselves just a little more.

Currently, we are in the final stages of collecting more current data from our members. We will soon release a SAM tool kit, which will help many of us get started in actually benefiting from the opportunities offered to us

by this benchmarking tool. It will contain examples of surveys, models, and useful tools aimed at helping us move positively along the professional continuum. We thank Nalco Chemical Company, and specifically Chip Ray, for sponsoring this part of our project! Finally, we are proud and pleased to report that our SAM will serve as higher education's official facilities benchmarking component!

### Comparative Costs and Staffing

This spring you have had a chance to respond to the 1995-1996 version of the CCAS Survey. You may have noted that, based on recommendations from the Information Services Committee determined in July 1996, the section referring to O&M costs/gsf has been eliminated. We understand that many APPA members (and nonmembers) used this information, and they will be disappointed with this decision. However, as with all survey information, we found that any information published is no more reliable than the data supplied. Historically, the data supplied in this section was too often not reliable enough to warrant continued publication. We expect to have the results of the CCAS available this summer.

### Custodial Staffing Guidelines

The current revision of this outstanding work is approaching closure, and we can all look forward to the publication of the current edition this fall. As you might recall, we have added certain categories of space to the staffing guidelines suggested in this publication. The first edition of this publication proved to be one of the more popular and frequently used of all of APPA's publications. We have every reason to expect the second edition to be at least as well received!

### Alliance with PGMS

Since grounds management is considered a core management responsibility for the educational facilities professional, APPA has formed an alliance with the Professional Grounds Management Society (PGMS). We are pleased that this partnership has now begun to flourish. In particular, two of APPA's initiatives—1) to increase the effectiveness of education for APPA stakeholders, and 2) forge stronger links between regions—are directly and positively affected by tapping into the willingness of PGMS members to share their information and talents. Therein lies the opportunity to partner with PGMS in delivering targeted grounds management programs and publications of a high caliber to our members. In like manner, APPA is pleased to offer its quality programs, products, and services to the members of PGMS.

### K-12 Research Efforts

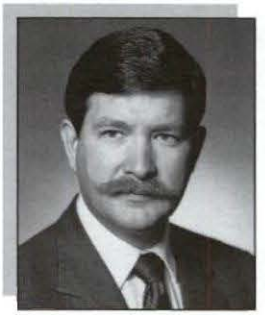
An initiative that may be undertaken by APPA involves the educational facilities professionals from the K-12 arena. We have solicited the services of a group of individuals who are either deeply involved with K-12 facilities, or who have a deep interest in them. These good folks will look at APPA's existing surveys (i.e., SAM, CCAS, Custodial Staffing, International Experience Exchange) to identify how they might relate to the K-12 sector. Many of us hope that we will find a relatively close fit, so that we might pursue an additional "handshake" in the future.

### APPANet

It's growing! The number of hits is growing! The number of tools available to you, the member, is growing. Very soon you will even be able to do your own searches, via the Internet, on certain APPA databases. We encourage you to keep visiting! To give an idea of how much usage is increasing, let us simply tell you that the average number of hits and user sessions per day has increased by almost 70 percent since our last report. The top sites accessed on APPANet (www.appa.org) include *Job Express Online*, publications, *Inside APPA*, peer profiles, and seminars and other educational programs. The following are a few changes we wish to highlight:

- New format on the home page calling attention to new items or timely information
- Expanded research section—facilitating access to surveys, articles, and other background information
- Honors for APPA members, identifying member institutions that have received special recognition and/or awards.

Although there are other projects and publications in process, we will hold off on sharing those with you until another time. Thanks to you for your support, and thanks to the Information Services Committee members, and certainly the other committees who help us in providing so many key products and programs to our members.



***Vice President for Professional Affairs John P. Harrod Jr.***
***University of Wisconsin/Madison***

# The Professional

Affairs Committee continues to work toward enhancing the awareness of our members to the ever-changing environment of facilities management. We look to support and recognize the achievements of those who are striving for excellence. Our ongoing activities require continued APPA staff and Professional Affairs Committee attention.

The **Facilities Management Evaluation Program (FMEP)** continues to be used by our members. However, only a small group participate each year (26 campuses since 1993). We have had seven institutions participate in the review process since January 1996. Currently, four of the institutions have completed the process and have received the final report. Campus participants and evaluation team members find the experience to be very rewarding.

The existing evaluation criteria has been in place since 1989. Representatives of the Professional Affairs Committee are looking at the possibility of incorporating the Baldrige guidelines and the SAM

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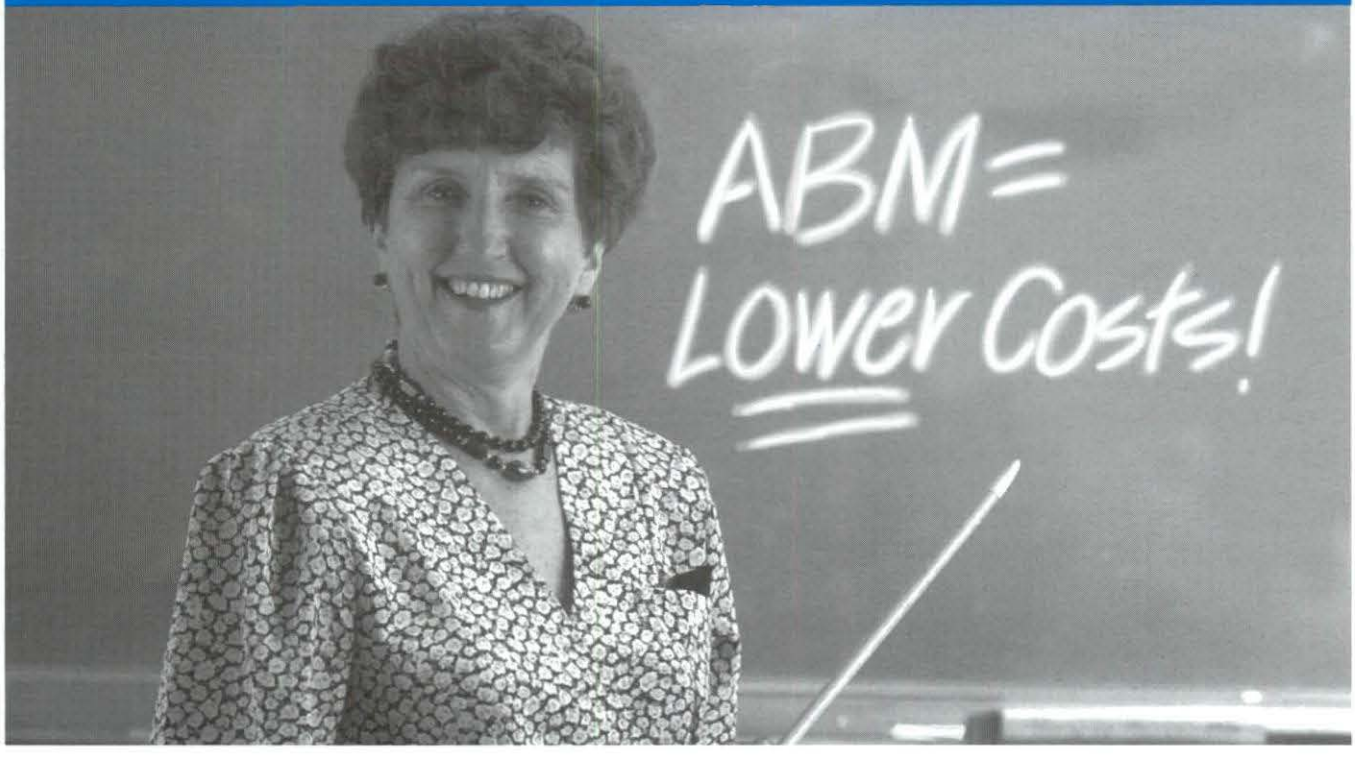


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*(cont. from p. 10)*

benchmarking tool into the facilities management evaluation.

The **Award for Excellence in Facilities Management** has had two applicants since the Salt Lake City meeting last July. The University of Toledo's Custodial Division was recognized for their excellence last December. The University of Arkansas, Fayetteville recently completed the review process and will receive the full institutional award at this year's annual meeting in Orlando.

This past fall, Miami University held an "on campus" celebration for their staff as Wayne Leroy made the award presentation. Campus recognition of the facilities group was enhanced with their event. We will continue to promote this type of acknowledgment.

The Professional Affairs Committee accepts applications and submittals for recognition of excellence of units or subdivisions within a university's facilities organization. It is felt that small successful steps within an organization can be a catalyst for the whole organization to build upon and therefore stimulate continued interest in the program.

APPA staff will be helping to develop a process outline identifying the steps to be followed when applying for the awards program. There has been some confusion by recent applicants about who should do what and how detailed the submitted material must be. The criteria used to review the institutions will also be evaluated. Baldrige guidelines and other appropriate indicators are to be considered.

Last fall, the committee was involved in two activities to **promote awareness** of APPA. The committee felt these activities reflect and further expand on the fourth strategic initiative—*"to promote awareness of APPA among senior officers of the institution served by facilities management personnel."*

- The *1999 National Electric Code* is currently being developed. In an effort to establish the presence of U.S. colleges and universities in the code-making process, APPA supported the efforts of Michael A. Anthony, an electrical engineer at the University of Michigan, in his quest to be appointed to the *NFPA Technical Committee.*
- ASHRAE is in the process of receiving comments on the proposed Indoor Air Quality Standards. While not technically responding to the issues, APPA submitted a letter of concern about the impact of the potential modifications.

# Executive Summary

## What Makes World Class Service?

*by Wayne E. Leroy, CAE*

A large percentage of APPA members and other educational facilities stakeholders have the opportunity to be in Orlando, Florida to experience first-hand "Service Disney Style." Those attending the 84th Educational Conference and 1997 Annual Meeting will also have the chance to hear some excellent presentations on the topic of customer service; two of these presentations are highlighted in this issue of *Facilities Manager.*

The number of books, articles, new companies, and consultants specializing in customer service/satisfaction services and products has exploded in recent years. Why this sudden surge in customer focus? The customer concept is really nothing new or revolutionary, and in fact has been in existence long before today's modern monetary system existed—it was called bartering. Individuals with certain skills, talents, or products exchanged or traded those items for things they needed or wanted. Whether you work with the barter system or the current system of purchasing goods and services, the "customer" is still the decision maker. For it is the customer who decides whether to trade or not trade goods, as well as whether to buy a certain product or service at a specific place, or chose to purchase a competitive product and/or from a different supplier.

Today, many nations of the world are struggling to implement an open access, customer-choice, market-based economy. The decisions that lie ahead will not be easy ones for nations, companies, service organizations, or individuals, but changes are occurring. And those changes are being driven by customer choice! As educational facilities organizations throughout the world grapple with the issues of implementing customer focused programs and services, three components are essential:

1. **Value.** There must be a perception that the product or service being purchased fulfills a basic need. Basic needs are those things that have greatest priority at the specific time of the decision making process to purchase. For instance, the typical department store will have an awesome selection of men's neckties from which to choose—usually more than 5,000 ties can be found. They range in price from about $20 to $75 or more and come in a variety of styles, fabrics, and quality. All of them go around your neck and tie the same way. Was there any perceived added value to justify paying $50 more for one type of tie versus another? The decision will be different for every person who visits the store for a new tie—perceived value. As an organization, APPA is constantly providing programs and services that have value to its members. Examples include educational programs, publications, and the recent research efforts of the Comparative Costs and Staffing Survey and the Strategic Assessment Model.
2. **Quality.** When we purchase goods or services we expect performance to measure up to our perceived expectations. As an example, the purchasing of an automobile requires a significant financial expenditure, and most purchasers want to be assured the quality of that purchase will last for a few years beyond the time period of the loan payments. So it is with services performed by facilities organizations; if repairs are made the customer expects to have the work completed correctly the first time. The same is true for other service functions such as cleaning the room, replacing light bulbs, or the myriad of other functions performed by the facilities organization. Perhaps there is a lot to be said for Ford's slogan "Quality is Job 1." Again APPA is forging new initiatives in quality. Some examples include redesigning the Institute for Facilities Management from its current three-track format to four tracks, the publication of the third edition of the Facilities Management manual, creating strategic alliances with groups such as Professional Grounds Management Society, and many other quality enhancing activities which will be reported in the coming months.
3. **Satisfaction.** Webster defines satisfaction as "fulfillment of a need or want, the quality or state of being satisfied." All of us as customers want to have that

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feeling the decision we made to purchase a product or service was a good one. Since purchasing our house almost 20 years ago, I have always done my own yard and lawn maintenance jobs. With about an acre of lawn and two sons living at home at the time, the job was much easier a few years ago. This year I decided to hire one of the local lawn care companies to do the early spring ritual of weed/crabgrass control, plus lime and fertilization. Like any good consumer, I contacted several companies for prices and availability of service. I selected a company, not because it was the cheapest, but because during my decision-making stage, they actually came out and did a complete lawn analysis and provided a written "prescription" for my lawn needs. Since that initial spring treatment I have received several phone calls from the company asking if I am having any problems or if they can be of additional service. I have also arrived home to find a note on the door saying they were driving by and just stopped to check. They have even left a few helpful hints such as "We noticed a few broadleaf weeds, so you should spray with weedkiller as soon as possible." It is a pretty safe bet that I will use this lawn company next year. Is your facilities management organization providing this same individual, personalized service to your institutional customers? If they are not and the opportunity exists for customers to "shop around," current customers may find other companies or people willing to satisfy their needs.

APPA as well is attempting to satisfy the needs of its members, and we think we are doing a good job. Why do we say that? More than 95 percent of APPA members renew their membership each year, which indicates a very high satisfaction level with APPA programs, products, and services. However, we cannot rest on our laurels, and we constantly have to assess satisfaction. That is the reason for APPA's current Strategic Plan, which emphasizes I.N.P.U.T. (Ideas, Notions, Proposals, Understandings, and Thoughts). We anticipate your input on APPA's programs and services.

Customer service and satisfaction is indeed a team effort. It involves everyone working together. In the facilities department that includes every worker and every department, not just the person on the telephone with the assigned responsibility of "customer service" or supervisors who are supposed to handle gripes and complaints. Customer service and satisfaction begins with the individual who comes in contact with the customer, the first-in-line worker/service provider. The APPA organization also seeks ways of improving continuous improvement and coordination between individuals, member institutions, chapter/state groups, regional associations, office staff, and other supporting organizations to work together toward common goals and objectives. For together, we can truly make APPA *the association of choice.*

## Key Elements In Customer Service & Satisfaction

• ***Listening Precedes Action*** - Conformance to guidelines, specifications, and policy manuals does not always assure customer satisfaction, but listening and taking appropriate action is always a winner! To be able to "listen," a good service-quality information system must be incorporated into the fabric of the organization.

• ***Reliability of Service*** - Jobs must be done or service provided when they are promised, within the budget estimates or other financial parameters, and performed in such a way that the customer is satisfied. The goal of most quality service organizations is to move from "satisfied" customers to "delighted" customers; the cornerstone of this transformation is service reliability.

• ***Service is Everybody's Job*** - Service is a multi-faceted management task that involves juggling a multitude of activities such as downsizing/reengineering, personnel issues, financial and budget pressures, and a multitude of others. Customer service and satisfaction begin with the point of initial contact. Quality customer service is an entire organization or institutional effort, but significant strides can be made and leadership provided by individual departments like facilities or even specific units, especially those that come into contact with customers. Case studies have indicated leadership for an entire organization can begin in a specific division or department.

• ***Educate-Educate-Educate*** - In every newsletter, as a part of every memo, at all staff meetings, at every opportunity people must be taught the strategic and financial value of complaints, about the need for urgency and quality, and perhaps most important everyone "owns" the problem. Training is the wheel of progress that will keep customer service and satisfaction moving forward.

• ***Greatest Resource is Human*** - The greatest attribute to developing and building a service delivery system is a human performance system. Service is a very personal, one-to-one concept. The successful organizations delivering high-quality service programs hire good people, pay competitive wages, experience low turnover of personnel, and obtain a commitment to service from the workforce. When all this is in place an organization demonstrates it values people!

**—WEL**

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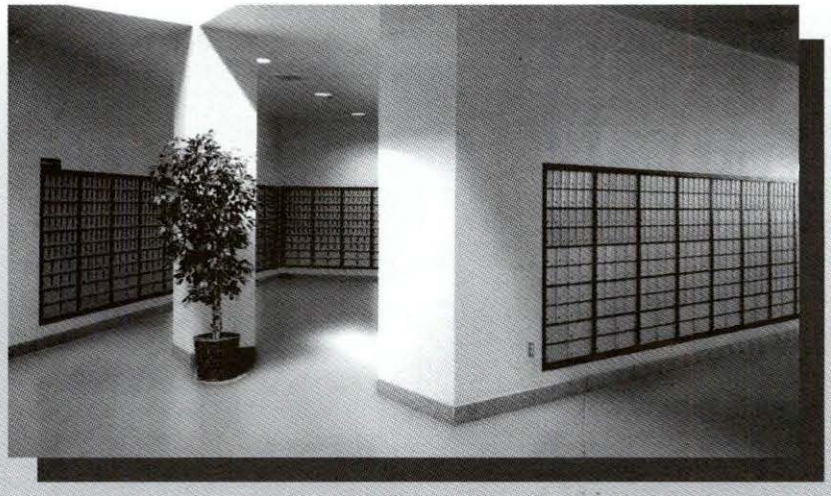

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# Focus on Management

## Change or Die

*by H. Val Peterson*

Being able to adapt to change is the key to success and happiness. "Adapt to it or die," was the message Lee Iacocca, former CEO of Chrysler Corporation, delivered to a group of building professionals and corporate executives at a recent gathering. "It's one of the few things you can count on." Change relates to all aspects of our world, our profession, our organizations, and our personal lives.

The products, equipment, materials, and chemicals we use at our institutions are becoming less hazardous and more user friendly. Even the surfaces that we work with are changing. For the most part we are moving away from woods and natural materials toward synthetics, plastics, and manufactured materials. These newer materials are typically easier to work with and easier to maintain.

Employees are also changing, both in how managers relate to them and what their needs and wants are. Employment isn't just dollars and cents anymore—it's providing the emotional support, social support, education, and training that employees need to do good work. Managers and supervisors must be "kinder and gentler." Employees must learn to work as members of a team—with less direct supervision.

Customer wants and needs are changing too. Whether work is done with in-house staff or through contract-service, facilities managers have to stay on top of change to make sure that quality service continues (or in some cases is enhanced) and that customer needs are anticipated ahead of time.

At the top of the list of important changes, however, is technology. In some areas, technology is just beginning to find its way into facilities management products, but in many other areas technology dramatically affects how we do our work. At the very top of the technology agenda for most facilities managers sits the computer. That should come as no surprise, since computers are an essential tool of most operations today. Computers offering networking, CD-ROM, and computer-aided facility management give us a lot more information a whole lot faster. Computers make it easier to keep track of everything and everybody.

For facilities administrators, computers have made life easier and at the same time more difficult; they facilitate but they also complicate. Building wiring and electrical outlets become inadequate, and to keep up with technology, the main building wiring and electrical service needs to be upgraded. Extra heat loads make existing air conditioning systems inadequate, or if they don't exist at all, computers make them a necessity. Typically, new cabling is necessary to network computers. "Dirty power" becomes a dirty word. Some buildings need K-rated transformers to get rid of harmonics

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problems. UPS (uninterruptible power supply) and electrical generators may be needed to "guarantee" electrical power at all times.

There seems to be a trend to replace paper with its electronic equivalent. But in order to do that on a widespread basis more information management protocols need to be established so that a more universal information exchange is possible. The Internet has done much to replace hard copy data (such as catalogs, product descriptions, and price lists) with electronic up-to-date information. Record keeping is an area in which technology can be a significant help. Computerized systems can help manage the load of information that must be available to demonstrate compliance.

Communicating with staff across town, at a branch campus, or just across many of today's widely spreadout campuses is an essential task for many facilities managers. Under these circumstances, telecommunication and multimedia systems are as important as desks and chairs. Telecommuting and work performed at remote locations is becoming more prevalent. Video conferencing, where once confined to a single location, must now be available in a variety of sites. Local area networks (LAN), teleconferencing, and computers that can pull up identical information at completely separate locations are at times a necessity.

A facilities manager needs to know the relationship between technology and a healthy working environment. What technology can provide and what employees will tolerate may be different. There are many alternative work strategies that are on the cutting edge. Most of us want to be on the leading edge, but not the bleeding edge. Computers have brought about a greater sensitivity to ergonomics. We need to provide the right lighting, seating, and keyboard, the proper monitor, and the appropriate configuration of the work station. We need to provide a good, safe place to work.

New products, materials, and finishes all create a need to be sensitive to indoor air quality. We need to manage the quality of indoor air in a manner that allows building occupants to have the highest level of confidence that the air quality is good. For indoor air quality, building environmental control systems offer a technological opportunity. In the past, the main emphasis of these systems has been to make a building comfortable. But we also need control systems that help us deliver a healthy building—systems that can do self-testing, check particulate counts, and perhaps more.

As facilities administrators take on responsibility for an increasingly broad array of products, the rapid pace of technological change poses a decision-making challenge. Building automation equipment and software is a good example. Automation applications can be

very broad in terms of energy, heat, cooling, lighting controls, fire alarms, and security. The technology is available to make our buildings and systems "smarter" than ever before dreamed possible.

Although it doesn't necessarily require technology to comply with new regulations and legal requirements, government mandates are a key challenge to the profession. In the United States, one of the most frequently dealt with mandates is the Americans with Disabilities Act (ADA). Some legal requirements have direct implications: the phaseout of ozone-depleting CFCs (chlorofluorocarbons) and halon, for instance, or bans on the production of some lamps. But a regulation doesn't have to make an item illegal to change the way decisions are made. Facilities managers regularly deal with similar requirements relating to energy usage, alternate fuels, water usage reduction, hazardous materials disposal, family medical leave, asbestos abatement, indoor air quality, CFCs, clean air and water regulations, commercial drivers license, historic preservation, fire and building codes and more. Even such simple purchases as carpeting may have recycling as a key consideration, since a number of landfills are restricting the items they will take.

Technology is moving so fast that even relatively new products can become dinosaurs in a fairly short time. Some of today's equipment and programs are outdated by the time they are purchased. It used to be that equipment could be assumed to be current for ten years or more. Not anymore. These rapid changes in technology—starting with the proliferation of computers—have imposed significant educational demands on facilities management departments. To maintain today's modern building and its systems you must be computer literate and understand electronics. Most large facilities management organizations have their own computer programmers. In today's environment, computer training is critical. Even trades workers are using computers to do their work.

Technology continues to evolve at its usual accelerating pace. The new technologies mentioned previously, along with many others not mentioned at all, will, for better or worse, make more data available than ever before. Buildings, systems, and even day-to-day operations will continue to become more complex as technology finds new ways to do things better. There are many challenges for the facilities manager: effectively dealing with change; cost-justifying your function; aligning facility management technology with the institution; and using your technology to support "virtual" concepts. The facilities manager has a responsibility to develop a vision of the future that effectively uses these enabling technologies. And as Lee Iacocca said, "Adapt to it or die."

Strategically Planning

# The Strategic Planning Tool Kit: Keys to Facilitating a Successful Strategic Planning Workshop

*by James O. Cole & Susan D. Cole*

So far in this column we have addressed why strategic planning is vital to an organization's success, discussed what strategic planning is all about, and explored various models and processes. Now, we will present the facilitation tools and techniques that allow a group of people to develop a strategic plan. This information will be of interest to those who are responsible for guiding their organization into strategic planning, but will be of greatest benefit to those individuals who are asked to lead or facilitate the actual workshop.

### The Need for Tools and Techniques

Strategic planning is a creative process and, as a result, a "fill in the blanks" approach is not feasible. The current reality, the environment, and the potential futures of each organization are unique, and thus each strategic plan must be "created." Following a proven process using facilitation tools and techniques enhances the potential for a successful strategic planning workshop. Since there are no predetermined "right" answers within any step of the process, the most valuable tools allow the planning team to creatively explore many options, and then logically select those which are most meaningful.

The basic pattern for most of the strategic planning process steps is:

- Clarify the issue to be addressed (usually in the form of a question).
- Develop a list of as many responses to the question as is reasonable.
- Integrate ideas that are common, eliminate duplicates, discuss specific ideas for clarification, and then choose the "vital few" for application later in the process.

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### Mission Statements, Principles, and the Driving Force

The purpose for devising a mission statement is to capture the essence of why the organization

exists and it is the synthesis of these themes that leads to a succinct statement of organizational purpose. This is an important "first step" in the strategic planning process.

In order to generate a new mission statement, the team brainstorms over the questions, "What is this organization's reason to exist?" or "What is its purpose?" When the creative brainstorming runs its course, review each of the ideas and ask, "Does this represent something for which the organization is held accountable, or is this idea a step or task along the way?" One to five themes regarding the organization's purpose for existence will begin to emerge as items that represent accountability are identified. These themes are then synthesized into as concise a statement as possible. Two other elements are often added to a mission statement—the organization's name and a reference to "for whom" the organization carries out its mission.

The result of this process is a mission statement. An example of a mission statement for a facilities organization is: "The mission of the Facilities Management Department at John Doe University is to provide, manage, and maintain the facilities to support the mission of the University, for the benefit of the stakeholders of the University community." The key words are "provide, manage, and maintain." These describe the essence of the Facilities Management Department for this institution.

Principles are derived in a similar process as the mission statement without the production of a single final statement. The operating principles and values can be brainstormed, integrated, and divided into several meaningful statements, each of which addresses a separate issue. For example: "We exist to serve our customer through providing value; this is our primary objective and we are dedicated to doing what ever it takes to achieve this result."

The driving force is the underlying momentum in the organization's future. It is established by reviewing and discussing the "predominant" driving forces, eliminating those that are not relevant, and customizing and combining the relevant forces into one statement, such as: "Our driving force

is to meet or exceed the current and emerging expectations of our customers."

### The Primary Tools: Developing Ideas

Brainstorming is a creative facilitation tool. It is a synergistic approach that effectively utilizes a team's combined capabilities, skills, and intelligence. In order to successfully be creative and yet sufficiently focused, a brainstorming group is usually asked to brainstorm against a specific issue, such as, "What are the strengths of our organization?" For the process to work effectively, it is vitally important that the rules of brainstorming be followed. It is the facilitator's responsibility to assure that the process moves smoothly while in alignment with the rules.

*The Rules of Brainstorming*

1. No idea is ridiculous. Even if an idea is unsuitable, it may trigger an idea in others.
2. Defer all judgments. There should be no criticism of another's ideas either verbally or with body language.
3. Build on one another's ideas.
4. Be creative!
5. Generate as many ideas as possible within a given amount of time.
6. Record all ideas. (Note: The facilitator must not judge the worthiness of any idea.)
7. Let ideas incubate. Periods of silence are okay.

Another way to generate lots of ideas is brainwriting. On a piece of chart paper record the question being brainstormed. Questions should be open, subjective questions such as, "What are the issues surrounding this problem or situation?"

*The Process of Brainwriting*

1. Each participant is given a pad of 3x3 Post-its.
2. They are instructed to write their ideas on the Post-its. Black ink pens work best.
3. The participants are seated around a table within reach of each other. They must be silent during the brainwriting exercise.
4. Each participant is to record one idea in three to eight words on a Post-it.
5. When each Post-it is completed, it is to be placed to the participant's right side. They can be strung together for convenience, but the stringing must not hide any writing.
6. When a participant runs out of ideas, he or she reaches to the left, and picks up the Post-its of the neighboring participant and reads them. Then, using a new Post-it, the participant writes down ideas that the passed notes have stimulated. Individuals are not allowed to write on any existing Post-its.
7. The process is complete when idea generation ceases.
8. The Post-its are then collected and processed by finding the vital few most important ideas either by using an Affinity Diagram or Interrelationship Diagraph, both of which are discussed later in this article.

### The Vital Few

The concept of the "vital few" is a product of the quality revolution in the United States. It was popularized by Dr. Joseph Juran who drew upon the work of Alfredo Pareto, an Italian economist. The result is the "Pareto Principle," which is translated into the term "multivoting" for the purposes of strategic planning.

Essentially, the principle of the vital few is that 80 percent of the problems experienced in a process can be accounted for by 20 percent of the core causes. Therefore, if one attacks and resolves or eliminates these "vital few" causes, 80 percent of the problems can be solved.

In strategic planning, 100 percent of the improvement ideas generated are reduced to the vital few 20 percent. For example, if the group was trying to determine the strengths of the organization, many ideas would evolve from a brainstorming process. From this list, 20 percent would be selected as the most important. These primary, vital strengths are those that represent 80 percent of the assets of the organization, and thus it is these few strengths that are utilized in the strategic planning process.

***The Process of Multivoting to Determine the Vital Few:***

1. After the brainstorming process is complete, review the ideas generated for duplication for possible integration into another idea. Rewrite the resultant ideas.
2. Multiply the number of brainstormed ideas by 10 to 20 percent. With a large group and many ideas, choose 10 percent of the ideas generated. With a small group or a limited number of ideas, select 20 percent of them. The key is to have enough votes that center on a

few items to discriminate between them. Too many votes leads to too many items being selected. Conversely, too few votes and too few items will not provide the distinctions sought.

3. Each individual is given a limited number of votes. For example, in paring down to the vital few strengths of an organization, the group could be challenged with the question: "If you could count on only X number of strengths to aid the organization in the future, which ones would you choose?"
4. Let the group members consider the options silently for a few moments. Then ask them to choose the ideas that most appeal to them up to the number of votes they are each allowed. They then make a note of their selected ideas for themselves.
5. The facilitator then asks individuals to state their selections. This is an honor system. Individuals must not change their votes as the voting proceeds. The latter voters must not be biased by the voting that has taken place before them.
6. Ideas receiving the most votes are the vital few. Make sure they are stated clearly and recorded carefully.

### The Affinity Diagram

The Affinity Diagram is a technique developed in Japan that takes brainstormed ideas and groups them in meaningful ways that are more creative than logical.

#### *The Process of Creating an Affinity Diagram:*

1. Randomize the Post-its on a vertical surface.
2. Participants are directed to move the Post-its into groupings that make sense to them. It is important that they "go by feel" rather than processing the ideas with logic.
3. Individuals don't need to worry about moving one someone else has moved.
4. If two of the same idea are needed in different groupings, make a duplicate.
5. Keep organizing and reorganizing ideas until the participants are comfortable with the resulting groups.
6. There is to be no discussion during the exercise; no talking of any kind.
7. When the group is satisfied, have them discuss header cards for each grouping that capture the essence of the groupings. One of the included Post-its can be used. These represent the vital few.

### The Interrelationship Diagraph

The Interrelationship Diagraph is another idea-grouping technique. It tends to be more logical than feelings-oriented. You begin with the same group of Post-its.

#### *The Process for Creating an Interrelationship Diagraph:*

1. Randomize the Post-its on a large vertical surface which the participants can mark with pens.
2. Each participant has a marker of some kind and draws arrows from one Post-it to another on the basis of:
   - Cause to effect (using an arrow head to indicate the direction)
   - One idea that drives another
   - One idea that follows another
3. When the group is satisfied that most of the relationships have been identified, the process is complete. This exercise can require considerable time since ideas are continually being reevaluated by the participants.
   - Those Post-its that predominantly have arrow heads leading to them are the results. In strategic planning these are the objectives.
   - Those Post-its that have arrows that predominantly leave from them are the driving forces or the vital few ideas important to the issue or problem. These are the strategies for the objectives defined by the strategic plan.
   - The remaining Post-its are details or subcategories of the objectives and strategies.

### Final Steps

The truly creative step in strategic planning is when the statements of the vision, and the assumptions, strengths, weaknesses, and threats are integrated and processed in order to identify the strategic objectives, and the strategic actions which will allow the organization to reach its vision. The following steps summarize the process:

- Brainstorm all of the issues with which the organization must cope or things it might do in the time frame of the plan. The vision, assumptions, strengths, weaknesses, opportunities, and threats impacting the organization must be clearly defined in order for the brainstorming to have optimal value.
- Discuss and classify each issue either as an end result or as an action to reach an end result.
- Integrate all of those identified as actions into a coherent and meaningful set of strategies. Many of the items will be subsets or tactics of a larger strategic thrust.
- Integrate the issues classified as results into meaningful groupings. These are the objectives of the organization.
- Prioritize the objectives.
- Prioritize the strategies on the basis of the priority of the objectives, and identify what any one strategy will contribute to the accomplishment of any one objective.

At this point, you have the full framework of a strategic plan. The details within strategies are the tactics, which equate to annualized efforts, with associated timelines and identified individual responsibilities for execution. These are all part of the "Organizing for Implementation" step that will be covered in the next installment of Strategically Planning.

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# How Valuable Are We To Our Customers?

*by Robert M. Casagrande*

Facility maintenance and plant operations are not glamorous enterprises. Nor are they likely to be topics of conversation at many Greek parties or faculty affairs on your campus. There are certain necessary services that are generally unseen and may seem somewhat mundane, but they can become quite noticeable when least expected or when least desirous. The maintenance department of any educational institute must deal with a wide range of customer demands and attitudes while trying to deliver high quality service to all customers.

During the summer we are all so busy trying to complete repairs and make improvements where possible. We proceed with as many projects as a summer can endure, and generally prepare the facilities for the return of the students. Come fall, we are just about ready for the arrival of our customers—the students who depend on our services.

Known as wisdom worshipers, chasers of creativity, and educational explorers, our students are certainly our most prominent constituency. We see them on campus grounds enjoying the environment, in the student center relishing a quick meal and some camaraderie, or in a classroom quenching their thirst for knowledge. But they only represent a portion of our body of customers. Consider the proposition that there are two classifications of customers: external and internal. The external customers are those we serve. These we know to be our students, our targeted market groups who wish to use educational services. Other external customers include the parents, alumni, corporations, businesses, municipalities, and other governing bodies and organizations that make up our pool of potential clients. The internal customers are those with whom we work with to better serve our students. We are speaking of the staff, faculty, administration, and benefactors of an educational institution. Maybe we have thought of them as coworkers, or people we work with rather than work for. Make no mistake, however, they are also our customers.

The words *customer* and *service* are very important to us. Put them together and our value should be apparent. Or is it? In the service we provide our greatest declaration is this: *It is not how valuable our customers are to us that counts; it is how valuable* we *are to our customers.*

How do we determine our value to the customer? First we must understand the great difference between how we view our value and how we are perceived by our customers. One way to examine customer satisfaction is through the "Laws of Service." The first law relates customer expectations to customer perceptions. If a customer perceives the actual service performed is higher than their original expectation, they will leave the system satisfied. The inverse of this statement is also true. If a customer's original expectation is not met, they will not be satisfied with the service. Over time this will contribute to the reputation of the service—good or bad.

The second law emphasizes the importance of the initial interaction between the customer and a service department as well as the overall first impression a customer gets of the department. When the initial request is fulfilled, this first impression will directly affect the customer's attitude and future expectation of the service department regardless of its validity or accuracy. If a customer perceives the initial service to be too slow (below expectation), that customer will form an opinion that future service will likewise be slow. That customer will then in all probability offer that perception to other customers.

To avoid such perceptions requires preparation and early action by the service department. One must first establish a goal. If operational excellence is one's driving force, developing foresight to serve as a guide is necessary to make decisions about strategy, opportunity, and consistency in program offering. Foresight rests as much on imagination as on prediction. "If you can imagine it, you can create it." A department's

***Bob Casagrande is director of plant operations & facility maintenance at Southern Methodist University, Dallas, Texas.***

capabilities and limitations must be known. The desires and needs of its employees must be known as well. This is more than being customer-led; it allows for a genuine empathy with human needs.

Next, we must know our customers and determine what they want. We have already identified the groups (external/internal) and types (staff/faculty, etc.) of our customers. Each has a different set of expectations and desires. There are at least three ways we, as service departments, can meet them. First, we can lead the customers where they do not want to go. This is the traditional practice of a service department. "We are short handed and overworked; we will get to your problem when we have time." This behavior has nurtured the proverbial "five individuals to do a one-person job" perception that prevails yet today in some quarters.

Second, we can listen to customers and then respond to their articulated needs. Many times customers will offer an explanation of what they want which may not be what they need. This is often demonstrated during a "hot or cold" call. For example, an individual wanting to open a window on a nice spring day calling in an order, "It's too hot! The air conditioning is not working."

Third, we lead customers where they want to go, but do not know it yet. This involves working with the customer, understanding their needs and desires, and following through to the successful completion of a request or a satisfactory explanation of its denial. To be successful, we need to learn what customers want, learn the relative values of customers' offerings, design deliverables that embody these wants, and inform the customers of availability. Specifically, we must determine where the greatest gains appear and note the areas of losses. Discover what benefits our customers value most and locate areas of customer complaints. Ascertain the mix of benefits that customers value most highly (*Consumer or Competitor,* Oxenfeldt, Moore). Remember, all customers are not equal and cannot be treated the same; however, all must be treated equitably.

How do we know customers are being treated equitably? As a benchmark for superior service, ask any of these questions when examining customer relationships: How would you feel about seeing a full reporting of your actions on TV? How would your spouse, parent, child, or close friend react? How would your feel if you were in the shoes of the customer? How do you want your department to be perceived?

We must be aware of the type of customer benefits we want to provide. What new type of customer benefits should we seek in five, ten, or fifteen years? What competencies do we need to build or acquire to offer those benefits to customers? Will we need to reconfigure the customer interface over the next several years? If so, what technologies will enable this weaving to occur? To enable our continued success, what do we want from our customers?

First, we have to want to know our customers. We must combine detailed customer knowledge with operational



flexibility so we can respond quickly to almost any need. Next, we should pursue a strategy of customer intimacy and continually tailor and shape our services to fit a customer's increasing lifetime value. Once we have customers it is vitally important to keep them—we want to develop loyalty. Why? When a company consistently delivers superior value and wins customer loyalty, the cost of acquiring and serving customers decreases. When customer loyalty goes up, costs go down; there are fewer do-overs, less redundancy, less bureaucracy. Customer loyalty is earned by consistently delivering superior value and delivering superior value is essential to a department's operational excellence strategy.

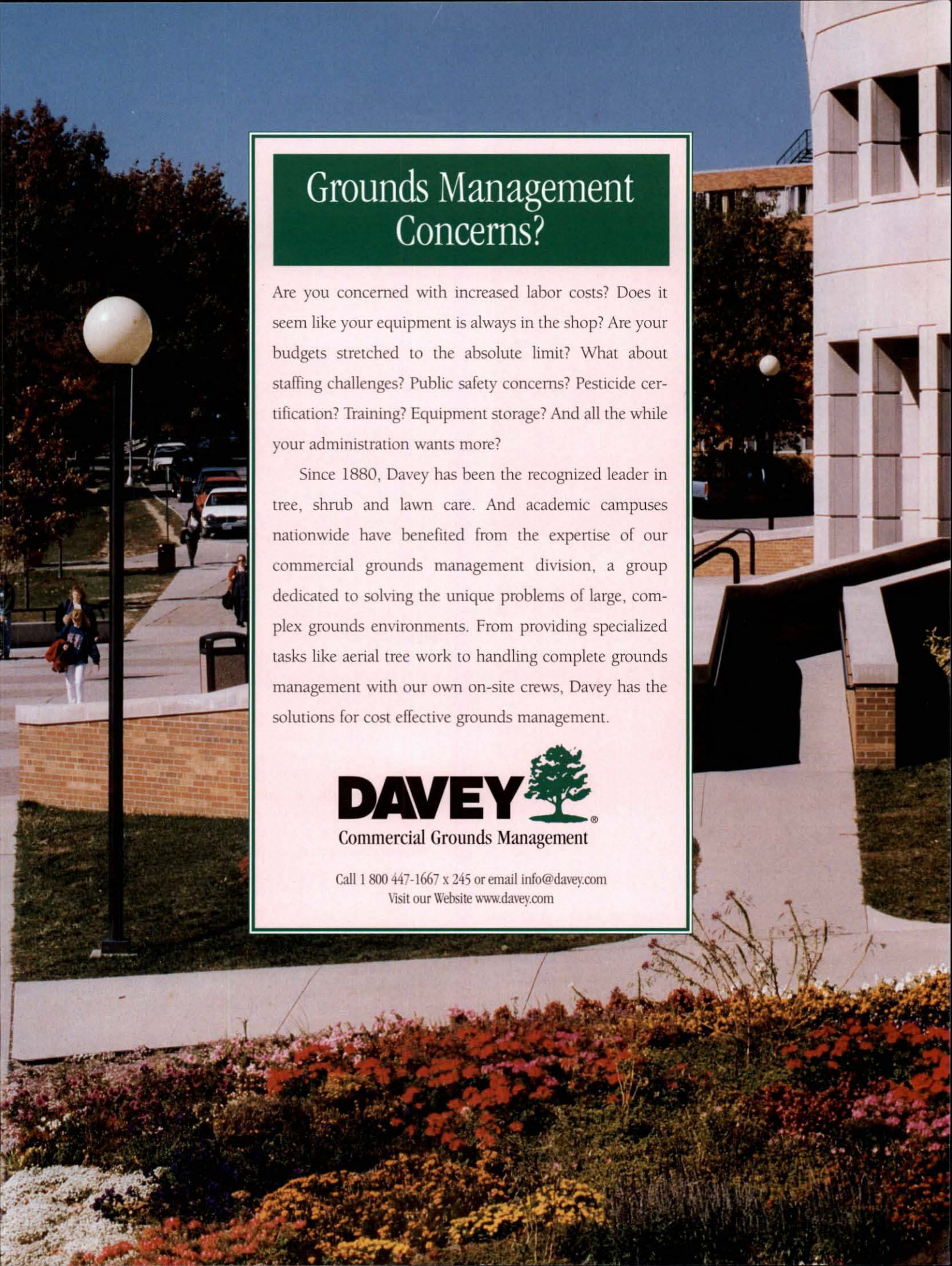
The better economics mean the university gains through:

- elevated employee morale and commitment,
- increased employee retention (productivity rises and training costs fall),
- enhanced employee job satisfaction leads to better service to customers,
- customers are more inclined to stay loyal to the university,
- as the best customers and employees become part of the loyalty-based system, and
- competitors are left with less desirable customers and less talented employees.

Employees who deal directly with customers day after day have a powerful effect on customer loyalty. It is with these employees that the customer builds a bond of trust and expectations, and when those people leave, the bond is broken. This circle of loyalty has cumulative effects. The more the circle grows, the stronger the loyalty becomes. With knowledge of which customers are likely to be loyal comes knowledge of which customers are not. Companies can then direct resources away from customers who are likely to defect and toward those likely to stay (*Loyalty-Based Management*, Frederick F. Reichheld).

Too often we do not think about the full implications of our value to the customer. We more or less take our value for granted. This means we are taking our customers for granted too. Unless we take pains to provide the best possible service, and do so in a competitive way, we will find it harder to keep customers. The better our service, the better we help the university in its mission.

Creating customer value and building customer loyalty is an excellent way to achieve sustainability. Loyalty serves the best interests of customers, external and internal. It is important for us to know who our customers are and what they do. How do we fit into the picture? What are their needs? What does it take to meet them? How can we contribute to their success? We must build a strong relationship with our customers. We must deliver the highest quality service possible, anticipate their needs, and develop a reputation for responsiveness. Let us focus on our value to our customers. Our customers are our students; our students are the hope for the future.



# Grounds Management Concerns?

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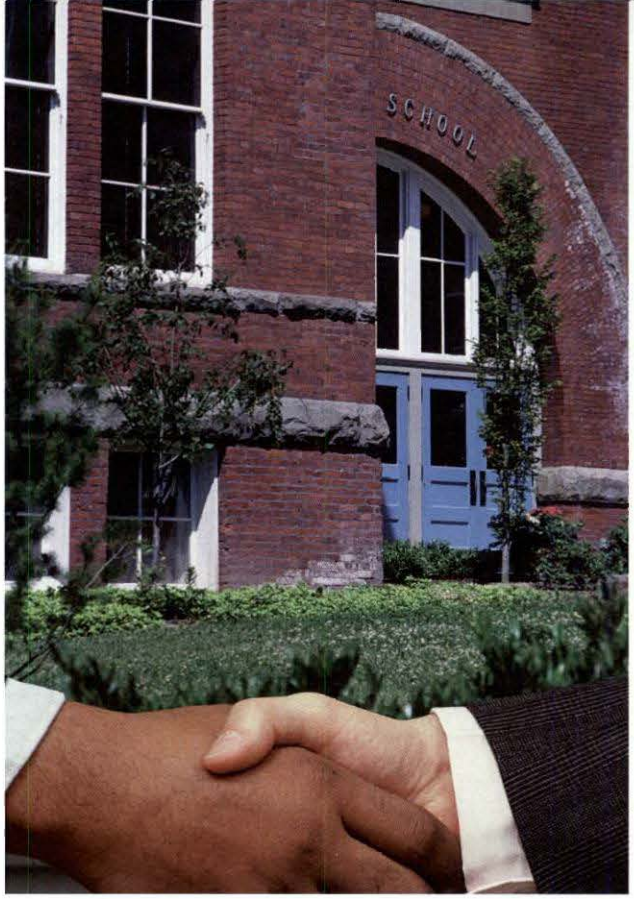


# Partnering with the Commerce School to Improve Facilities Services

*by Jay W. Klingel*

Over the years, the facilities management organization at the University of Virginia has derived the benefits from having an objective third party examine certain aspects or functions of our operation. We have normally engaged professional consultants to evaluate and make recommendations on issues such as our organizational structure, productivity enhancements, and audits of building systems, to name a few. For the most part, these evaluations have provided helpful information and have led us to make changes resulting in more efficient and effective service delivery.

In the fall of 1996, Facilities Management had the opportunity to work with a unique group of consultants found in our very own backyard—from the university's Commerce School. The Commerce School offers a graduate course each fall semester entitled Business Process Reengineering. The course focuses on the concepts, methods, and technologies of business process reengineering through direct interaction with a client organization.

During the summer of 1996, Facilities Management and the Commerce School discussed the mutual benefits of working together as partners for the upcoming fall semester project. The professor of the course, Dr. Ryan Nelson, met with Facilities Management senior staff to describe the course and discuss the aspects of a potential fall project. Dr. Nelson shared with us the results of two projects that previous classes had completed with university units—the Pediatrics Department and the Student Health Department.

Since our organization had been debating for some months about the prospects of moving to a zone maintenance structure, we felt this would be a good opportunity to have a "consultant" provide us with an evaluation and a recommendation on our basic method of facilities maintenance service delivery. The timing was right, the fee structure (free!) was right, and the project offered a unique cooperative venture for academia and administration. We decided to enter the partnership with the Commerce School based on the premise that we would both profit from the project.

Late in the summer, Dr. Nelson published the description of the course:

> **Comm 530—Business Process Reengineering**
>
> The primary purpose of the project is to provide an opportunity for each student to explore the application of BPR concepts, methods, and tools in a real-world setting. Specifically, students will be expected to apply such tools and techniques as process modeling, metrics, simulation, interviewing, facilitated workshops, and change management within UVa's Facilities Management organization.
>
> The scope of the project will include an evaluation of alternative methods of facilities maintenance service delivery throughout the academic division of the University. This analysis will include both a centralized, trade-based structure as well as a decentralized, zone-based structure. In addition, recommendations for process improvement should be made which consider customer responsiveness, cost effectiveness, and change management.
>
> During the course of the semester-long engagement,

---

***Jay Klingel is director, business management services, within the University of Virginia Facilities Management Department, Charlottesville, Virginia. This article is adapted from his presentation at APPA's 1997 Educational Conference in Orlando, Florida.***

the instructor would act as the *partner*, the students would function as *consultants*, and Facilities Management would serve as the *client*.

The text for the course was *Eating the Chocolate Elephant*, by Mark Youngblood. The book offers an approach to managing organizational change through Total Process Management (TPM).

### Preparing for the Project

As summer closed, we agreed with Dr. Nelson on several items that needed to be addressed in preparing for the fall semester project:

*Communication to Facilities Management Staff:* We agreed it was imperative to communicate as broadly as possible to the Facilities Management staff about the upcoming project. Recognizing that while many would look forward to interacting with these students studying our organization, we realized others might feel threatened or imposed upon by their visits. We used a combination of staff meetings, electronic mail postings, and bulletin board notices to explain to our staff and help them prepare for the student group. As a final step, the chief facilities officer wrote to department heads, superintendents, and supervisors describing the project and asking for their cooperation.

*Student Space and Access to Facilities Management:* Just prior to the start of this semester, we provided a small office space for the student group. The space had a telephone with voice mail, a computer with access to our LAN, and written materials such as policies and procedures, organizational charts, etc. While we thought at the beginning that this would be vital space, it turned out that the students did not typically use the space or the office equipment.

*Schedule for Reports and Deliverables:* Before the semester started, we agreed to a schedule for client presentations and routine reports. In addition to weekly summary activity reports, an interim presentation on findings was planned for mid-semester, and a final presentation planned for the semester end.

*Class Organization:* Dr. Nelson organized the students in groups to evaluate various Facilities Management organizational components, and one student was designated the overall project manager. Seventeen students had enrolled for the course. The initial assignments are shown in Figure 1.

**Figure 1**
**Comm 530: Project Organization (Phase 1)**

| Role/Responsibility | Client Contact(s) | Student(s) |
|---|---|---|
| Partners | Bob Dillman | Ryan Nelson<br>Randy Smith |
| Project Manager | Jay Klingel | K.C. Hildreth |
| *Trades:* | | |
| Carpentry | Shop Foreman | Mark Hankey<br>Mike Manning |
| Electrical | Shop Foreman | Larry Austin<br>Kenny Jones |
| Grounds Maintenance | Shop Foreman | Mark Campbell<br>Terry Spaid |
| HVAC | Shop Foreman | Sean Ivusic<br>Alex Solorzano |
| Plumbing | Shop Foreman | Indy De<br>David Neumann |
| North Grounds Zone | Shop Foreman | Joyce Evans<br>Judy Kim |
| Support Systems | Fred Rembold | Kurt Steinbach<br>D.I. Von Briesen |
| Customer Relations | Jay Klingel | Lisa Kane |
| Benchmarking | Jay Klingel | Paul Hamann |

### Conducting the Review

During the first class meeting, the chief facilities officer and I were introduced to the class. The dialogue during that class session between the professor, Facilities Management (client), and students (consultants), provided the opportunity for a clear understanding of the scope of the review. It was agreed that I would attend the last half hour of each class session to provide information and answer questions.

The project was divided into three main phases: analysis of the current environment, a comparative analysis of other Facilities Management processes, and the development of recommendations. Originally, the consulting team organized around specific trade areas, with two students per trade. The North Grounds Zone was treated as a separate area for this portion of the study. Each team developed a process model for all work that its trade completed. The teams then reorganized around five common processes and developed a model for each process, noting differences between trade groups. The processes are listed below:

- *Process Work Orders:* How a request gets from a customer to the worker ultimately responsible for completing the call;
- *Perform Maintenance:* Starts when a work order is assigned, and includes all actions taken to fulfill that request;
- *Document Work:* Encompasses all paperwork used to document information related to work orders;
- *Service Customer:* Interaction between Facilities Management and customers; and
- *Manage HR:* Hiring and training of facilities management employees.

During the project, the students inserted themselves effectively in our organization. They interviewed senior management, foremen and trade supervisors, systems analysts, and tradespeople; they spent full days observing and participating in preventive maintenance and service work; they spent time at the service desk understanding and participating in the work reception and management process; they reviewed our automated work order systems and financial systems in detail; they reviewed customer surveys and interviewed customer groups; and they asked questions—very good questions. Many of us were surprised at how intuitive these students seemed to be in an area in which they had no experience. As the review progressed, we realized that these students, in a very short period of time, were

developing a sound understanding for the business of facilities management.

The students presented an interim report at mid-semester that formed the basis for the second half of our project. The interim report found significant areas for improvement. Upon consultation with management, four main process areas for improvement were chosen for analysis during the second and third phases:

- *Maintenance Performance:* The processes associated with completing work
- *Work Control:* The process of monitoring and tracking maintenance performance
- *Human Resource Management:* Activities related to managing personnel
- *Customer Service:* Any process associated with serving the customers

During the second half of the semester, the consulting team was divided into two teams. One analyzed the benefits and potential improvements in our centrally-managed shop structure. The other analyzed the benefits and potential improvements in our pilot zone at North Grounds.

***Students Sean Isuvk and Mike Manning interviewed facilities managers Jay Klingel, Will Shaw, and Dick Fowler. Interviewing these and other managers helped the student consultants develop and understanding of current business practices.***

### Recommendations

After benchmarking with other facilities management operations, conducting external research and brainstorming with facilities management personnel, the teams came up with a set of recommendations.

1. The centralized team found that operations could be most effectively improved by staying with a modified version of the current operational system. Specifically, the centralized team made recommendations regarding the following processes in facilities management:

- Streamlining service orders
- Simplifying documentation
- Batching and scheduling service orders
- Balancing and prioritizing service performance
- Managing inventory
- Hiring service providers
- Training service providers
- Motivating and evaluating service providers

In addition to recommending process improvements, the centralized team addressed implementation issues and customer focus questions.

2. The zone team argued that the core processes could be most improved by changing the entire facilities management division into a zone-based operation. The zone team first defined and described "zones" in the context of Facilities Management. Then the team supported its argument that a zone system would be best because it:

- Empowers employees to conduct their job more efficiently and accurately
- Encourages employee ownership of buildings and equipment
- Increases the efficiency of performing work
- Fosters a supportive environment between individuals
- Increases the likelihood employees will become self-sufficient in performing work
- Allows more focused efforts to control costs and budgetary targets
- Separates maintenance from cost-reimbursable activities
- Educates the employees to be knowledgeable in multiple trades

Last, the zone team examined implementation issues and gaps that exist between current facilities management operations and the proposed zone-based system.

### Final Report

At the conclusion of the semester, the students published a 37-page final report. For their final exam the students, as a group, prepared a two-hour oral presentation of the final report for the managers of the facilities organization. Each of the 17 students participated in the oral presentation in which the findings, analyses, and recommendations were discussed. A significant portion of the students' grade was based on their presentation content and skills, and their preparation and concentration was evident. At the conclusion of the report we joined the class and professor for dinner and conversation. This informal gathering proved most interesting as the students freely discussed some of their experiences getting to know the people in our organization.

### Results and Future Considerations

The final report summarizes the discussion of the centralized versus zone argument and concludes by discussing the importance of eight basic process improvement issues, namely: customer focus, vision, goals, strategy, processes, incentives, measures and knowledge. The conclusion asserts that an excellent organization strives to align these eight issues and views process improvement as a constantly changing process, regardless of the form that the internal operations take.

After the semester break we shared the final report with the facilities management staff that had taken part in the review. The 54 published recommendations ranged from

simple, obviously advantageous suggestions to controversial major organizational changes. In order to manage which ones we would act upon, we asked our six department heads for a prioritization. Each recommendation was listed on a spreadsheet and was assigned a numerical value as it applied to each of four criteria: cost effectiveness, responsiveness, customer benefit, and quality of work. Once the prioritization was complete, we proceeded with implementation of the 15 highest ranked. At the time of this writing, six of these recommendations are in effect, and the others are in various stages of implementation.

***Student working on the project related well with the Facilities Management staff. They attended staff meetings, visited work sites and, as show here, attended the annual Facilities Management Barbecue.***

The project actually has provided a dual benefit for the Facilities Management organization. First, we received recommendations for business process improvements from a group of knowledgeable, creative, and ambitious constituents of the university community. While many of the recommendations will be of considerable value to our organization, the process itself may have been more beneficial. It provided Facilities Management, managers and tradespeople alike, with the opportunity to contribute to the academic process and become more familiar with the true customers of the institution.

Dr. Nelson shared his thoughts on the benefits to his students:

"Perhaps the most significant benefit for students lies in their exposure to *real* people with *real* problems; i.e., working with a client to analyze their current organizational situation and devising ways to improve the workplace. Perhaps the most significant challenge (frustration!) for students lies in their exposure to *real* people with *real* problems. Students learn very quickly that they need to take extra measures to manage expectations, facilitate clear lines of communication, establish planned meetings (with agenda), and respect the needs, concerns, and competing pressures of their clients."

We in Facilities Management feel we really "got our money's worth" on this project and are pursuing follow-up projects through this, and other, academic resources. The experience of learning from our students, and actively participating in the academic process, has made us feel even better about the ways Facilities Management can contribute to higher education at the University of Virginia.

***The author acknowledges Dr. R. Ryan Nelson, associate professor of commerce, for his leadership and contribution to the project.***

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# Refurbished Buses Drive MSU to Huge Savings

*1964...In the beginning...MSU buses at the Shaw Lot interchange. September 1964, first day of new self-supporting bus system operation at Shaw Lot.*

*by Gene Garrison*

A recent newspaper article reported that new studies reveal a strange occurrence in the business world—increased, not decreased, quality is resulting from downsizing and other reorganization measures. The report provokes a little pondering by nearly all of us, but at Michigan State University, looking for creative ways to provide better quality at lower cost without sacrificing customer satisfaction is part and parcel of each assignment. This tendency to routinely seek more out of less has nothing to do with "reengineering the organization" or our school nickname— Spartans; it is merely our normal way of looking at business.

As an example, the buses in our financially self-supporting bus system averaged more than 27 years of age, and we needed to find a way to replace them with an equipment account balance at only 20 percent of the estimated revenues needed. Moreover, the entire project needed to be done in such a manner that bus pass, ticket, and charter rates remained low enough to still appeal to those customers who would have to pay to use the service. The final solution was such that we replaced all of the buses, avoided nearly $11 million dollars in expense expected to occur over the next 25 years if new buses were purchased, and accomplished it all with no service price increases.

*1986...Bus refurbishing turned heads. $250,000 face lift adds 10 years to mechanical life of vehicles and gives buses modern appearance.*

The Campus Bus System began operating in 1964 as Michigan State University struggled to relieve traffic congestion and cope with moving 40,000 students to classes held ten minutes apart and spread over a 5,000-acre campus. Since those early days, millions of students have traveled to classes on the same 51-passenger GMC transit buses. In fact, more than two generations of students have compared stories about life on this rapidly growing campus when buses were one of the few things that did not change.

Although the bus system did gradually shrink in size from its peak of 25 units, 17 of the original buses remained in 1996, including one 1964 model. They had been refurbished and then repainted, but essentially the vehicles remained pristine 1960s vintage, linking present with past, and sons and daughters with parents. In May 1996, however, romanticism finally gave way to necessity. The first of 17 newly refurbished General Motors RTS buses rolled into its new home inside Michigan State University's Spartan Stadium, and the old buses quietly went to the auction block.

From the beginning, the mandate has been to provide quality student transportation at a reasonable, self-supporting price. Although bus systems traditionally require subsidy, the requirement to remain a self-supporting, affordable service has not changed. We did enjoy some early years when the buses were so crowded you would have thought we were giving away money, but that level did not continue. By the fall of 1967, only three years after the system started, ridership had fallen dramatically and new trends toward health, conservation, and ecology began to emerge. As the trends became a 1980s lifestyle, the bus system faced the challenge of how to survive with only a fraction of previous ridership and revenues.

The bus system was able to remain a financially self-supporting system for more than 30 years, largely by operating equipment that remained mechanically sound but had long since exceeded its depreciated life. However, it became increasingly obvious that the age of the buses and the high cost of

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***Gene Garrison has served since 1972 as manager of automotive services, physical plant division at Michigan State University in East Lansing, Michigan.***

replacement was soon going to force a decision about continuing bus services in its present form, if at all. Knowing we had to generate a $5.1 million bank account to replace buses was an insurmountable, disheartening task when we had been accumulating revenues at a rate of approximately $25,000 per year.

With the cost of new buses escalating to nearly $300,000 a piece, each year that ended found us with one-year-older buses and more total dollars needed for the project than when the year began. Fortunately, we had built a maintenance program that kept buses operating reasonably well, despite their age. We even refurbished them at two different times. The second phase, in 1986, was so successful that we had customers asking if we had purchased new buses. Nonetheless, we were only putting off the inevitable. By the fall of 1994, 30 years after the system began, it was clear that the 1986 refurbishing project to extend the useful life of the buses another ten years had succeeded but could not be repeated. We concluded that there were only a few options to be considered in evaluating the bus fleet; going out of business was not one of them:

- The alternative of continuing bus service with the fleet in its present condition was judged untenable. The image of quality service was being steadily eroded by intermittent equipment failure and a dingy appearance.
- The second alternative was to evaluate the feasibility of purchasing a new fleet with less than one-fifth of the required funds available. Replacement would have required leasing or financing arrangements, in excess of $5 million, plus considerable interest expense.
- A third possibility was to contract with a private agency to provide bus service. The hourly, daily, and seasonal fluctuations in class schedules require rapid response to avoid customer complaints. Loss of direct control of operations, combined with a continuing expense of monitoring a contract did not seem the ideal solution.
- Refurbishing the 30-year-old buses again was determined to be cost prohibitive and in violation of Americans with Disabilities Act legislation. The cost of minimal refurbishing was well above the $10,000 amount specified as the maximum without requiring that all buses be made accessible to persons with disabilities. The expense of refurbishing to include a wheelchair lift would cost more than $30,000.
- Buy good condition later-model used buses.
- Buy older, used buses and refurbish them.

We were convinced that the sixth alternative, to purchase older used buses in the early-to- mid-1980 vintage and refurbish them, would allow Michigan State to achieve all of its objectives at less than one-third the cost of purchasing a new bus fleet. In addition to handicapper accessibility, our

minimum equipment shopping list included power steering, power brakes, and air-conditioning—features missing in the original fleet and available with most every other bus system for years.

Figure 1 compares the cost of purchasing used buses to the cost of purchasing new over a 25-year operating cycle—an approach that generates a cost-avoidance of nearly $11 million over the next 25 years.


***1996...Refurbished RTS buses signal new beginning. MSU purchases 17 used GMC RTS coaches and completely refurbishes them for an investment total approximately 1/3 the cost of new buses.***

The financial projections presented are conservative. The difference in maintenance costs of "new" and remanufactured equipment is an estimate, but again conservative. Also, the analysis does not consider such intangible factors as possible increased revenues because both approaches were anticipated to generate more daily ridership and charter activity.

The development of the idea and concepts was performed in-house by administrative staff. All questions and projections were thoroughly reviewed, scrutinized, and reviewed again. However, the key to the project was the relationship built with the bus rebuilding company during the previous two refurbishing projects of the older fleet. Discussions with the president of that firm began as early as 1991 when an agreement to monitor the used bus market to determine the optimum time for purchase was first reached. The optimum time occurred in midsummer 1995.

The Automotive Services Department worked closely with the University Purchasing Department and established criteria for a contract that enabled the vendor to act as an agent for the university to purchase, transport, and refurbish 17 GMC RTS buses. The financial example reveals that the timing of this purchase was extremely advantageous given limited financial resources outlined earlier. We established no preset calendar for the shipment or the refurbishing other than to time the introduction of the newly refurbished buses to coincide with the beginning of a school year. Given the magnitude of that assignment and the schedules of both parties, the fall of 1996 served as the introduction for our "new" equipment. With receipt of the RTS equipment, old buses were sold at State of Michigan auction, netting approximately $850 each, considerably more than earlier estimates that the older transit coaches were worth $300 to $500 dollars.

The final project cost of $1,591,628.90 is nearly $125,000 less than the $1.7 million budgeted originally. All the minimum items on our shopping list were included. In addition, the project included an ergonomically designed bus driver seat, upgrade of the heating system to enhance customer comfort during the harsh Michigan winters, and installation of new fuel and air filters designed to cut those maintenance expense items by approximately 75 percent.

We chose to let the arrival of the buses speak for themselves. However, the striking design triggered an immediate, positive reaction, and some publicity within the university community did occur. In addition, the pride of the bus drivers—even our bus mechanics, with having new equipment—is indescribable. When the media recorded the improvements and low cost, it was obvious the project was a winner.

The biggest winners of all were our customers. Entering students generally had no means of comparison between new or old buses, and no way to know rates had remained the same; returning students never saw an increase in pass or ticket prices even though they may have realized that the buses were different; and charter customers did not pay one cent more than the previous year. In fact, pass prices have not increased since 1992 and, at $65 per year (less than 30 cents per day), remain one of the biggest bargains on campus.

The passing of these buses does bring an end to a common reference point in conversations between parents, children, and old friends about what it was like to be a student at Michigan State University these last 30 years. We embrace history so passionately that it is a tribute to our Spartan spirit that we adjust so readily to necessary change...and that we seem to know instinctively when it is time to move on and begin making new memories.

**Figure 1**

**25 Year Bus Life Cycle Cost Analysis[1]**

| | New Bus | Used Bus[2] |
|---|---|---|
| Purchase Transit Bus | $310,000 | $93,625 |
| Less Cash Reserve | (50,000) | (50,000) |
| Less Sale of Old Bus | (862) | (862) |
| Monthly Payments @ 8% | 600,163[3] | 62,292[4] |
| Refurbish @ 10 yr. pt. | 30,000[5] | 50,000[6] |
| Purchase "Used" Again @ 15 yr. pt. | -0- | 62,447[7] |
| Refurbish @ 20 yr. pt. | 50,000 | -0- |
| Less Cash Reserve | | (50,000) |
| Less Sale of Old Bus | | (862) |
| Monthly Payments @ 8% | | 16,877[8] |
| Life Maintenance | 337,500 | 450,000 |
| Estimated Cost 25 Years | $1,276,801 | $633,517 |
| Net Savings Per Unit | | $643,284[9] |

[1] estimated 25 year useful life for a bus
[2] approximately 10 years old; major refurbishing performed
[3] repayment over 25 year period
[4] repayment over 10 year period
[5] first phase refurbishing at $30,000
[6] second phase refurbishing at $50,000
[7] replaced at end of 25 year useful life; figure is 10 years probated
[8] repayment over 10 year period
[9] fleet savings estimated at $10,935,828 (17 units) through 2020 A.D.

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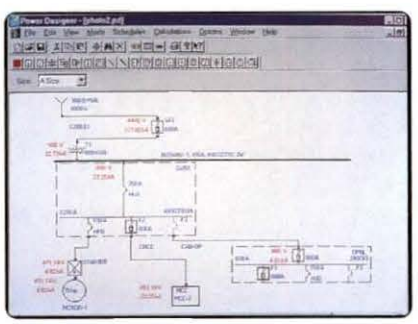

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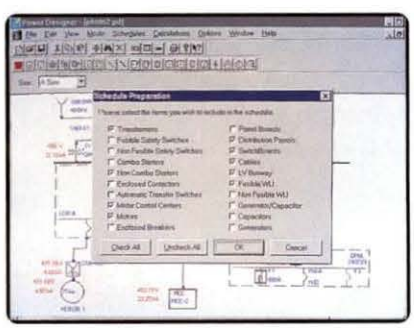

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# Statistical Process Control and its Role in Process Improvement

*by Edgar C. Ray*

Statistical Process Control (SPC) is defined as the statistical use of system data to attain process improvement. Historically, SPC has been used for process improvement in manufacturing processes; however, in the past decade, SPC-based computer programs have gained increased acceptance in other areas such as facilities management organizations.

In its purest form, SPC is a predictive tool. The intent of SPC is to help operations personnel recognize abnormal process variation before it adversely affects results, giving the operators the opportunity to take the necessary corrective action. This is how SPC has traditionally been used in the manufacturing environment. Unfortunately, this use has not adequately made the transition into the utility side of the facility—particularly in the area of water treatment.

Many of the common SPC/Statistical Data Management programs that are available provide the following basic graphs (at a minimum):

**Trend Chart** - provides an historical view of process data. The historical results are plotted on a graph that includes the process specification limits (the limits that are set by you or your supplier).

**X Bar Chart** - resembles the Trend Chart. The X Bar Chart plots the average of a given number of data points on a graph that includes control limits (upper and lower limits that are calculated based on the historical data).

**Range Chart** - plots the variance between the points on the X Bar Chart. The Range Chart includes an upper control limit which is also calculated based on the historical data.

**Process Capability Chart** - (or bell curve) plots the process data versus its frequency. The Process Capability Chart includes both the control limits and the specification limits.

In water treatment processes, market research has indicated that operations personnel tend to limit their use of these graphs to the Trend Chart (an historical overview of process data versus specification limits). There are many underlying reasons for this limited use, including: a lack of training on SPC, a belief that SPC is overly complicated, the benefits of SPC are not apparent, etc.

Regardless of the reasons behind this limited use, the outcome is the same—the full benefits of SPC are not realized. When this is the case, the SPC/Statistical Data Management

***Chip Ray is market development manager for Nalco Chemical Company, Naperville, Illinois.***

package becomes nothing more than a glorified log sheet. Some initial process improvement is gained through the graphical depiction of the process data, but further improvements are not seen.

To attain continual process improvement from the implementation of an SPC/Statistical Data Management program, all four of these common graphs must be used. When evaluated together, these graphs will help the operators predict problems and they will enable management personnel to focus their improvement efforts on those things that will provide the best return on their investment. To examine this further, an explanation of the two general types of variation that impact process control will be helpful.

There are two general categories of process variation: special causes of variation and common causes of variation. Special causes of variation are those process variations that result from something that can be controlled and corrected at the process (local) level. Common causes of variation are those process variations that result from something that is inherent in the system. To help differentiate between the two types of variation, let's look at a water treatment example.

When the solids concentration of a cooling water rise due to insufficient bleed-off, the variation may be the result of a special or a common cause. If the bleed-off is insufficient because a strainer in the bleed line plugs, the variation is the result of a special cause—something that could have been corrected at the local level. On the other hand, if the bleed-off is insufficient because the bleed line is too small versus the current bleed requirement, the variation is the result of a common cause—the problem is inherent to the system.

By following some relatively simple procedures, the X Bar, Range, and Process Capability charts will point out if special causes of variation are occurring and they will indicate how much of the existing system variability results from common causes.

The first step in attaining process improvement through the use of an SPC/Statistical Data Management program is to attack the special causes of process variation. Two of the four charts are used for this purpose. The X Bar Chart is used to predict special causes that

*(cont. on p. 43)*

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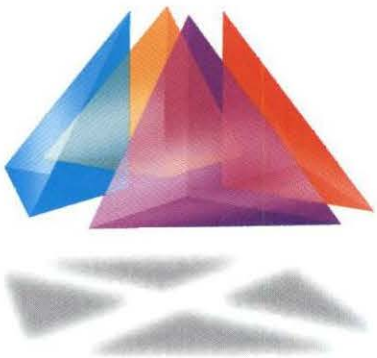

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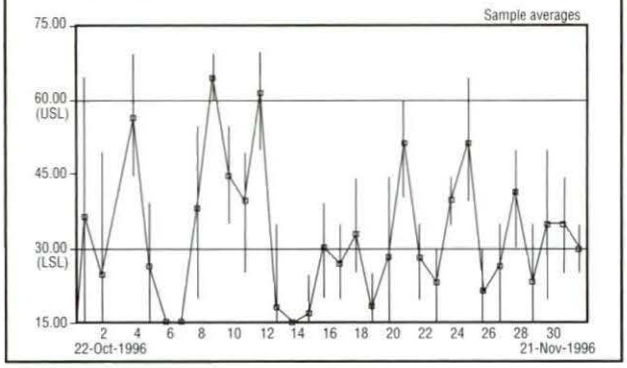
(cont. from p.41)

result from subtle changes occurring in the system, and the Range Chart predicts special causes that result from dramatic changes.

Once special causes are detected using these charts, operations personnel should take immediate corrective action to prevent these special causes from adversely affecting system results. Subsequently, training programs should be provided and preventive maintenance systems should be developed to prevent a recurrence of these special causes. As process improvement continues, the vast majority of the special causes will be eliminated. At this point, the focus of process improvement efforts will shift to the reduction of common causes.

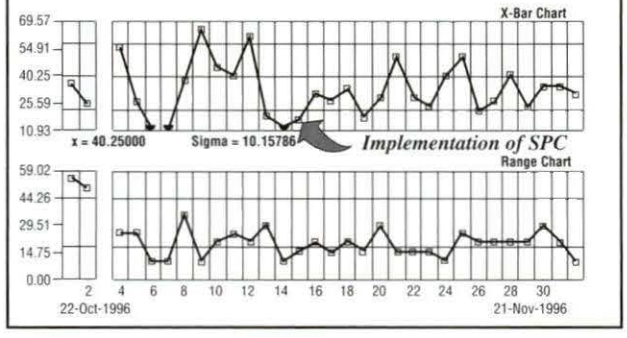
**Figure 1**
**NALCO Specification Chart**
**Midwest Manufacturing Plant — Oxygen Scavenger**




As stated, common causes of variation are those process variations that result from something that is inherent in the system. Common causes are addressed by attacking the system. In the earlier water treatment example, if the high solids concentration was the result of insufficient bleed-off due to an undersized bleed-off line, the common cause of variation could be eliminated by increasing the size of the bleed-off line. Reducing common causes of variation will lead to a process becoming capable (a process is considered capable if 99.73 percent of the process data falls within the specification limits).

Process Capability Charts (bell curves) show whether or not a process is capable, and they help indicate how much of the existing process variation is due to common causes. Once special causes of variation are eliminated and the focus for process improvement shifts toward addressing common causes (attacking the system), further improvements should be thoroughly scrutinized based on the financial policies/constraints of the organization. This is not to say that attacking special causes of variation should be pursued regardless of their cost; instead, special causes can invariably be eliminated through improved operator training and the implementation of preventive maintenance programs. On the other hand, addressing common causes typically requires a capital investment on the part of the organization.

**Figure 2**
**NALCO X-Bar and R Charts**
**Miswest Manufacturing Plant — Oxygen Scavenger**




To properly evaluate process improvement through the reduction of common causes of variation, all personnel involved with the process should jointly work to identify each of the common causes that adversely affect system results. These common causes should then be ranked in order of their impact on system variation. Based on this list, all potential improvements should be investigated for each common cause that has been identified (beginning with the common cause that has the most impact on process variation).

Using the financial policies/constraints of the organization as well as other related factors, a decision should be made to either proceed with process improvement using the best method available or to wait until a better solution becomes available that will meet the evaluation criteria. After a common cause has been identified and a process improvement action has been implemented, the process should then be reevaluated to determine if additional process improvement is necessary or warranted. As with the earlier action, further process improvement should be based on the financial policies/constraints of the organization.

In conclusion, SPC is a relatively simple tool that can be used in facilities management to attain process improvement. The key to the success of SPC is using the information that is generated by the statistical program to identify and eliminate special causes of variation before they adversely affect process results. Once these special causes have been eliminated through improved operator training and preventive maintenance, then the SPC package can be used to address common causes of variation.

### Example

After receiving training on the use of SPC to attain process improvement in facilities management, the utilities supervisor of a Midwestern manufacturing plant put SPC to work. The problem he faced was that several of his boiler tubes needed to be replaced for the second time in five years because of leaks—metallurgical tests indicated that the

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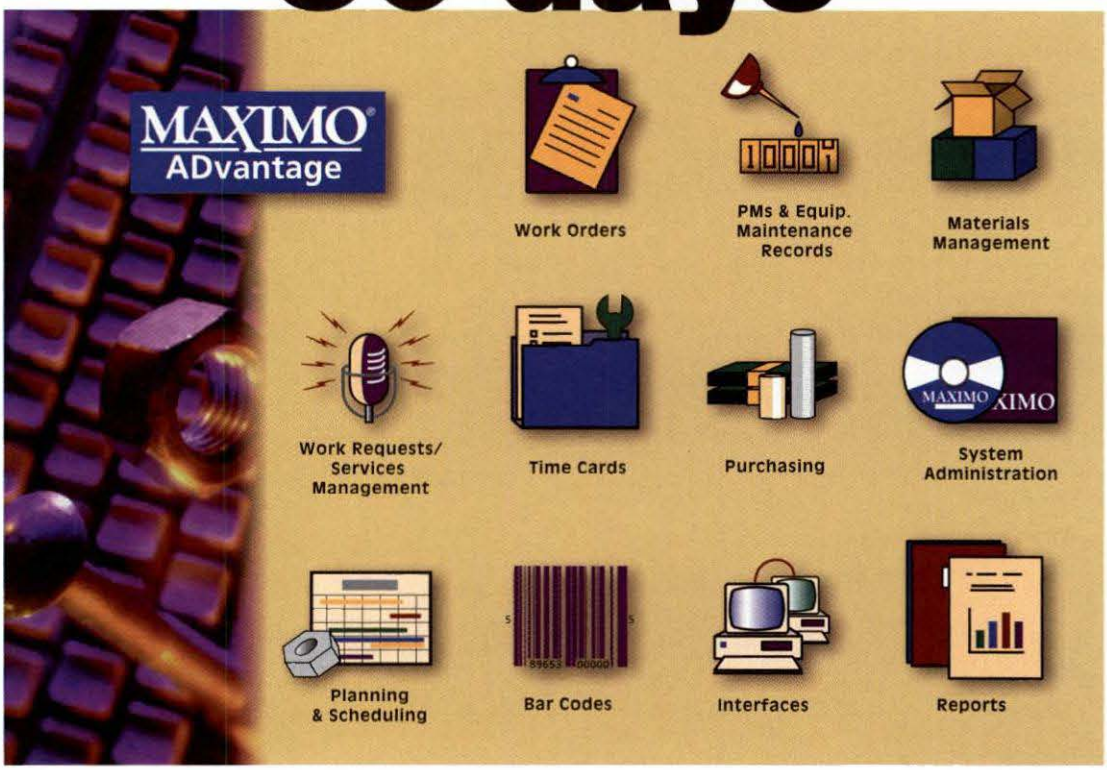


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tubes had failed due to oxygen pitting corrosion. Based on the historical data for the boiler water oxygen scavenger level, the utilities supervisor found that the oxygen scavenger level varied dramatically (Figure 1, page 43).

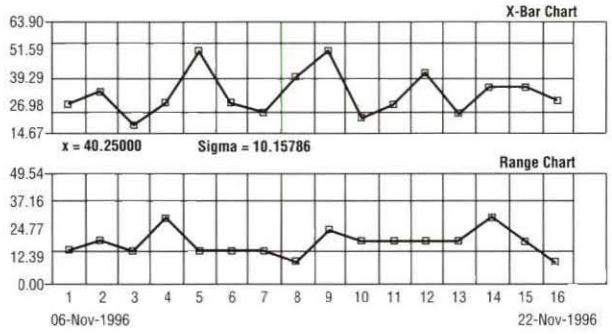
A thorough review of the water treatment supplier's service reports as well as the operator log sheets revealed that the typical "special causes of variation" that had led to these variances were as follows:

- Insufficient inventory of oxygen scavenger product
- Over / under feed into the oxygen scavenger day (mix) tank
- Lost prime on the oxygen scavenger pump
- Plugged oxygen scavenger chemical feed line
- Leaking oxygen scavenger chemical feed line

Using his knowledge of SPC, the utilities supervisor trained the operators on the fundamentals of X Bar and Range charts and then implemented an SPC program by having the operators evaluate the oxygen scavenger readings. Through the use of both X Bar and Range charts, the operators quickly found (and reacted to) several special causes of variation that were adversely affecting the control of boiler water oxygen scavenger levels (Figure 2, page 43). By designing and implementing preventive maintenance programs along with operator training, the majority of the special causes were easily eliminated (Figure 3).

Unfortunately, Process Capability Charts indicated that the process of controlling the boiler water oxygen scavenger level was still not capable—even after the virtual elimination of special causes of variation (Figure 4). To find the possible reasons that the process capability was poor, the utilities supervisor formed a Quality Improvement Team with a goal of determining the common causes of variation for the process. Based on input from all members, the team uncovered the following primary common causes of variation.

**Figure 3**
**NALCO X-Bar and R Charts**
**Miswest Manufacturing Plant — Oxygen Scavenger**

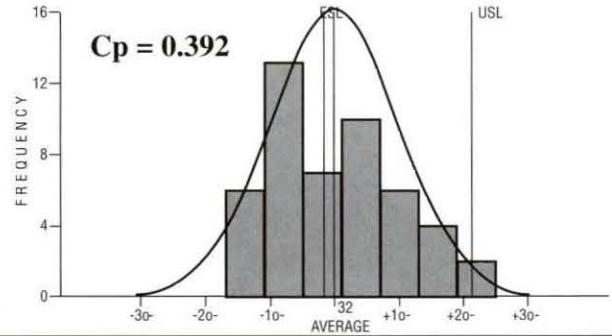



**Chemical feed pump:** The chemical feed pump was undersized—it could not keep up with demand during peak steam loads.

**Chemical demand:** Demand for oxygen scavenger changed based on the boiler cycles of concentration—control of chemical feed was not designed to automatically adjust based on these variances.

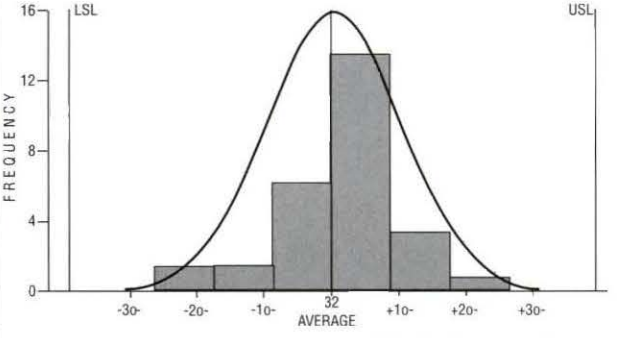
An analysis of both primary common causes of variation listed above indicated that the best (most cost effective) approach to reducing process variation was to replace the existing chemical feed pump with one of sufficient size.

**Figure 4**
**NALCO Process Capability Chart**
**Midwest Manufacturing Plant — Oxygen Scavenger**
**06-Nov-1996 - 21-Nov-1996**

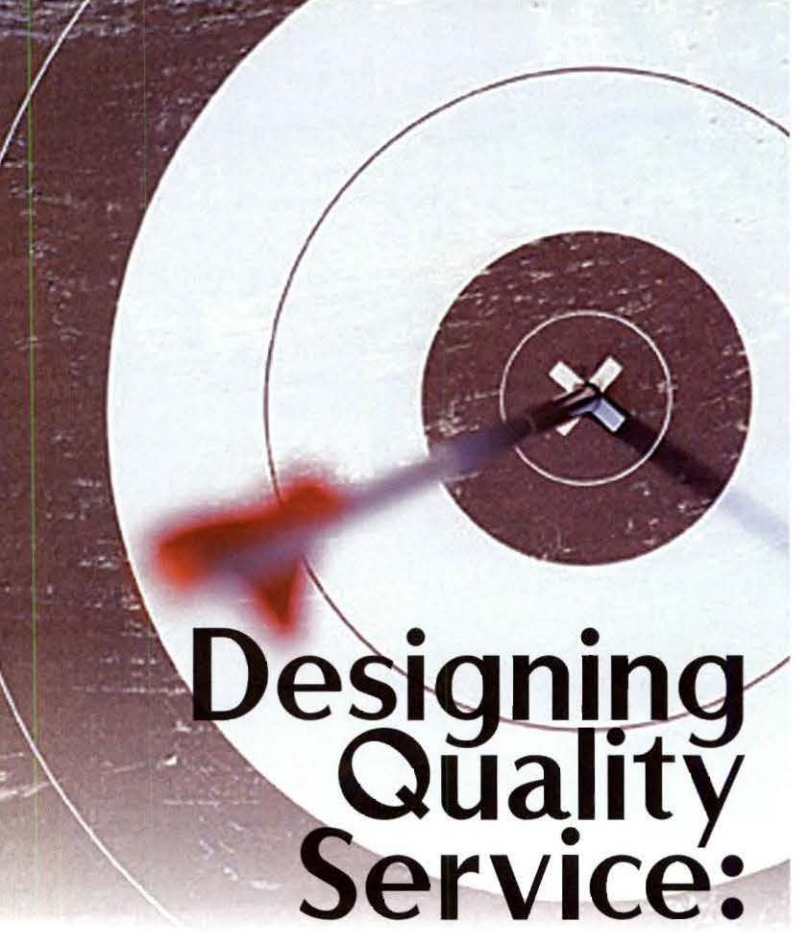



Based on the historical costs associated with boiler tube failure and the cost estimates to replace the pump, the utilities supervisor calculated that the return on investment for replacing the pump would easily surpass the company's hurdle rate. As a result, the pump was replaced and boiler water oxygen scavenger levels were monitored to determine the new process capability. After several weeks of monitoring, the Process Capability Chart indicated that the process was capable—oxygen scavenger levels could be maintained within proper range (Figure 5).

**Figure 5**
**NALCO Process Capability Chart**
**Midwest Manufacturing Plant — Oxygen Scavenger**
**18-Dec-1996 - 31-Dec-1996**




Since the implementation of the SPC program more than two years ago, the facility has opened the boilers for inspection twice. To date, no oxygen pitting has been observed on the boiler tubes and iron levels in the boiler water have been reduced by over 50 percent. The utilities supervisor and the operators are now using SPC to improve several other facilities management processes.



# Designing Quality Service:

## *The Service Excellence Model*

*by Michael A. Ellicott & Rodney J. Conard, Ph.D.*

In today's competitive world of downsizing and cost cutting, the concept of quality service is often lost in the shuffle. Institution administrators continually push for lower costs at a time when our ultimate customers—students, parents, staff, and faculty—make demands for more and better quality services. Ever-increasing governmental regulation and oversight, combined with increasingly complex facilities, compound the challenge of trying to do more with less. Finally, aging, entitled in-house workforces make our organizations vulnerable targets for outside competitors promising more efficient operations at significantly lower costs.

The experiences of our manufacturing and commercial service industry colleagues over the past 15 years provide informative lessons on how to deal with this situation. They have successfully responded to global competition by realizing that survival is dependent upon rebuilding their businesses to deliver better, faster, and cheaper. By focusing on customer deliverables and reengineering work processes to eliminate waste and design in quality, truly competitive organizations have convincingly demonstrated that it is possible to achieve concurrent and continuous improvements in quality, delivery time, and work cost-efficiency. Further, they have learned that motivating the people who actually perform the work to participate in process redesign and share responsibility for its performance produces exceptional results.

Downsizing and cost-cutting are crisis measures that will not position us for long- term survival. If we are to participate in the future of our institutions' businesses, we must understand these emerging concepts, integrate them into feasible applications for our institutions, and nurture them through critical structural and cultural changes.

### Challenges Facing Institutional Service Organizations

Several characteristics unique to institutional service organizations underscore the magnitude of the management challenge we face. Unlike manufacturing, service employees are directly and nearly constantly visible to our customers. Our customers perceive the quality of services we provide not just in what we accomplish for them, but in our interactions with them as well. Resolving a customer's complaint that a workspace is too warm is not simply a matter of repairing the mechanical system. We are also expected to manage our appearance, communication, and interaction with that customer in a satisfying manner.

We frequently face logistical challenges as well. While a manufacturing environment may contain an entire operation within one observable space, our service personnel are generally dispersed and frequently moving throughout an institution. This clearly challenges traditional methods of supervision, which frankly are becoming increasingly ineffective.

Today's manufacturing processes are carefully and cross-functionally engineered to minimize cycle time, work time and waste, and are well documented before they are put into production. Specific methods to measure and report performance (productivity, waste, cost, etc.) are established. During operation, extensive efforts are made to monitor outputs and reduce variation in the process. Often, employees receive extensive training before they enter into the process.

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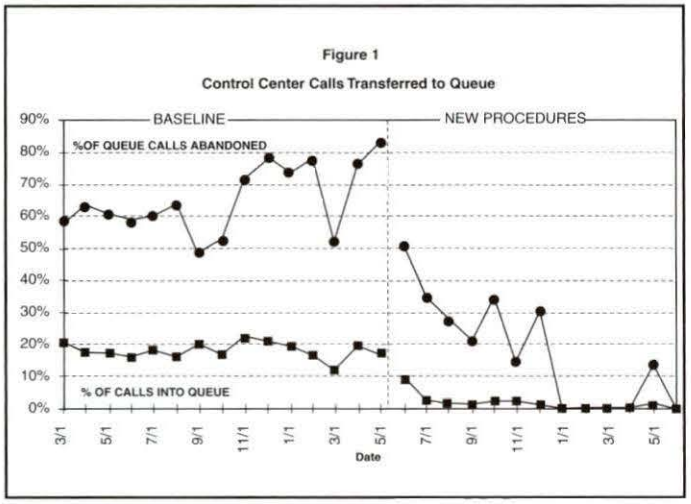
***Mike Ellicott is assistant vice president, facilities planning and management, at Wayne State University, Detroit, Michigan. Rod Conard is president of Conard Associates, Inc., Nashua, New Hampshire. This article is adapted from their presentation at APPA's 1997 Educational Conference in Orlando, Florida.***

Increasingly, organizations are adopting collaborative frameworks that empower and motivate employee teams to share bottom-line responsibility.

By contrast, institutional service delivery processes are rarely engineered. More likely, they are founded on a "conventional wisdom" or evolutionary basis, and focused on convenience of preparation and delivery rather than on understanding and meeting customer requirements. Process control is a nearly non-existent concept. Each service provider may modify the work process at nearly any moment to meet immediate and individual needs, frequently unaware of or unaligned with the company's overall goals. Each instance of delivery of service is highly discretionary, subject to the whims of the provider, customer, and numerous external forces (weather, traffic, etc.). Very little process performance measurement takes place.

Quality control measures generally involve correcting service delivery problems, rather than tracing deficiencies upstream to locate root causes and fuel continuous improvement. Employees typically receive a bare minimum of process training, and management approaches remain generally authoritative in nature. It's becoming increasingly clear that we're doing it the hard way, and it just isn't working.




### The Service Excellence Model

We need little persuasion, given the pressures we are now facing, to accept the need to quickly adopt many of these emerging organizational, process, and management concepts into our institutional service operations. But accepting the need is no longer the challenge. The difficulty before us now is to draw upon these emerging concepts, select those that are practical for our applications, integrate them into systematic programs that can be quickly and effectively implemented, and encourage the cultures of our organization to embrace new ways of working. We must rapidly bring our organizations into the ability to deliver the results—better, faster, and cheaper—that customers value.

At the Harvard University Medical School, the Facilities Maintenance Organization (FMO) initiated a Service Excellence program in 1993, with the express purpose of applying an integrated set of leading-edge concepts. FMO had retained Conard Associates to develop a customer-focused, employee-based continuous quality improvement program. When author Ellicott arrived as FMO Director in early 1994, he added two key ingredients: leadership interest and support. The Service Excellence model emphasized six fundamental tenants:

***Create a shared responsibility for change.*** Communicate that change is essential to survival, and that it must be a collaborative accomplishment. Raise the awareness that each employee has a critical relationship with the business, not just with a job.

***Focus on core service processes***—sequences of activities that provide services to customers. Resolve to design quality, speed, and cost-effectiveness into every step of those processes. Start with those processes that have the most impact on your business.

***Create empowered, cross-functional process-improvement teams***, comprising the people who actually do the work, and given genuine responsibility and accountability to improve core service processes. Examine the process through the entire path from customer request to customer deliverable.

***Develop performance measurements and process controls,*** and ensure that performance data are quickly provided to process performers so they can make timely adjustments. Promote measurement and process control as value-adding, front-line actions that are part of the service delivery process, not methods for management to police employees.

***Create an environment of positive reinforcement*** for desirable performance. Traditional authoritative management methods rely upon negative reinforcement—getting people to do what is expected by threatening them with negative consequences if they don't. This is historically ineffective given the logistical challenges of institutional service operations, and more important, it doesn't motivate valuable discretionary performance from employees.

***Focus management support directly on core service processes.*** Refocus the role of management to promote team effort and to facilitate, empower, and reinforce continuous improvement.

### A Success Story from the Service Excellence Program

The Service Excellence Strategy Team, composed of individuals from various functions and levels within the Facilities Maintenance Organization, as well as customer representatives, created an overview map of the service delivery process. This map illustrated our service deliverables,

and the points at which our processes interacted with our customers. We were immediately shocked to realize how many opportunities for customer contact existed within our service processes, and how ill-prepared we were to ensure the quality of those many contacts.

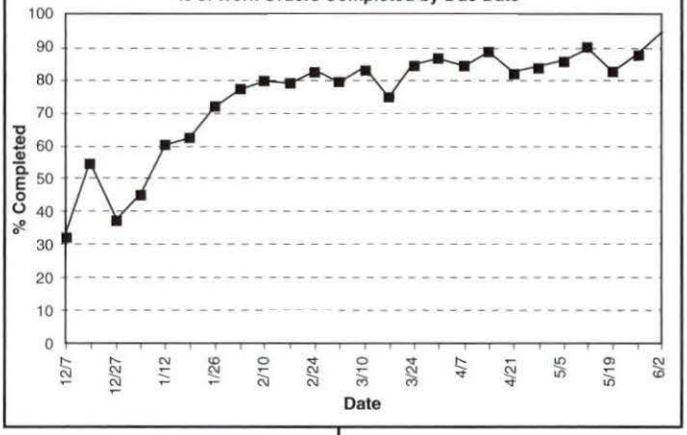
Several essential sub-processes were identified from the overview map. These included the work intake process, the work creation process, the work assignment process, the work tracking process, and the work completion and reporting process. For each sub-process, we evaluated the benefits and difficulties of improvement. It became evident that the work intake process, which was under direct criticism by our customers, offered the most immediate and valuable improvement potential.

### An Opportunity with the Control Center

The Control Center functioned as the heart of the work-intake process. Individuals there answered incoming customer request calls, initiated work orders, and dispatched emergency services. The was the first step in our overall process, and the one through which virtually all our customers made first contact with our service organization.

Unfortunately, customers had many concerns with our work-intake process. They complained that all too often, they could not get through to our operators, transferring, instead, to the dreaded waiting queue. Once into the queue, they reported little hope of being retrieved, so most callers simply hung up to try calling again later. Once connected to an operator, customers reported that they were not handled in an effective or satisfying manner. Rather than getting the perception that we were pleased to have the opportunity to help them, they indicated they were often made to feel as though they were inconveniencing us. Customers often attempted to circumvent the Control Center, by calling supervisors or other individuals they hoped would be more responsive. This, of course, complicated our effort to create and manage work order flow. The downstream sub-processes also had complaints about the Control Center. They explained that often, work requests prepared by the Control Center were inaccurate, delayed, or lacking important information.

Figure 2
% of Work Orders Completed by Due Date




Briefly, a quick-fix, work-around solution was attempted. Facility managers, each responsible for customers in selected buildings, were charged with becoming direct contacts for all their designated customers. In less than two weeks, however, it became clear that this solution only compounded the problem. Since facility managers were constantly out of their offices, they were unable to answer the large volume of incoming calls. Customers found themselves transferred to answering machines, which was no more satisfying than the Control Center queue. It was taking longer than ever to get work requests into the service delivery process. It became obvious that we couldn't work around the problem. We had to reengineer the Control Center work-intake process.

### Reengineering the Control Center Work-Intake Process

We began by recruiting a Control Center team composed of members of the Control Center, facility managers (as customer representatives), and the work entry function. We reviewed and discussed the overview map of the service delivery process, and the importance of the work-intake sub-process, both to customers and to the other sub-processes that followed it. We discussed our customers' concerns and the difficulties we were having in other parts of our service delivery process that resulted from actions taken by the Control Center. Once the problems, and the importance of resolving them, became clear, we agreed that the Control Center team should take the lead to improve the work-intake process. There were two key reasons for this decision. First, we recognized that the people who actually worked in the Control Center every day had the best knowledge of its operations. And second, we knew that if the Control Center did not buy into and own any improvements that were made, there would be little chance those improvements would be successfully implemented or maintained.

The Control Center team mapped the work-intake process in detail. They identified each point at which a customer interaction occurred, and determined what requirements would most satisfy customers. They established a performance goal of answering every incoming customer call within four rings. They agreed to a specific, professional greeting which would be used to answer every incoming customer call. They designated specific lines for incoming and outgoing calls, so customer calls would always receive priority response. They changed the coverage pattern, so they would be better able to capture additional incoming calls when some operators were tied up on calls. They identified specific information that should be obtained during each customer request call, and prepared a checklist to help them obtain this information reliably.

### Process Control and Performance Measurement

The team also created a process control method. Checklists were developed listing each activity of the redesigned process, as well as the information that was to be written onto each work request. Several times each week, Control Center operators, facility managers, and others would use these checklists to observe activities as they were occurring. They would then calculate a process control score and share their observations with the operator being observed. Although we had some concerns that operators might resist these process control checks, we were careful to not use them as an evaluative event, but rather, simply a way to help us all keep the process operating as it had been redesigned. Since the operators were co-owners of the redesigned process, they, too wanted to keep it on track.

The team established two primary performance measures to evaluate improvements in the work-intake process. The first measure examined the percentage of incoming customer calls which were answered within the goal of four rings (before they were transferred into the queue). The second measure examined, for any calls which went into the queue, the average length of time which transpired before the call was retrieved from the queue.

### Positive Reinforcement...and a New Relationship with Management

Both the process control data and the performance measurement data provided opportunities to provide positive reinforcement to Control Center operators. The data was shared immediately and freely. When the data indicated that performance was improving or maintaining high levels, members of the Control Center were congratulated by each other, the facility managers, their supervisors, and others. The improvements brought another reward as well. As customers received improved service from the Control Center, they were less critical and more complimentary to the operators.

With clear process documentation, process control checklists, and performance data, managers, and supervisors were able to involve themselves with the Control Center process in a more direct and value-adding way. They became part of the team, where everyone shared the same goals to serve customers effectively. When there were problems with the process, they used their experience and resources to help the team fix them. Their relationship to the Control Center operators shifted from judgmental and authoritative to becoming a knowledgeable and helpful partner.

### The Bottom Line

Over a period of six months, while the team was mapping and reengineering the Control Center work-intake process, data on the process of the performance was collected. The percentage of incoming calls that flowed into the hold queue averaged nearly 20 percent during this period, with little variation. While 20 percent may not seem high, it meant that, for an operation averaging nearly 100 calls per day, at least 20 of the callers would be unhappy. Once the redesigned process was implemented, the percentage of calls that flowed to the queue quickly dropped below 1 percent. The percentage of calls in the queue which were abandoned, which averaged over 50 percent, dropped to nearly zero. More important, improved Control Center procedures led to an increased number of work orders completed on time. Needless to say, customer complaints all but disappeared—and we even began to get compliments.

### Institutionalizing Service Delivery Improvements

This service delivery reengineering model differs from traditional process improvement initiatives in two important ways. First, it draws upon the talent and commitment within the organization, creating an empowered, collaborative effort. The cross-functional team maps and analyzes core processes to identify reengineering opportunities. The team remaps and documents the reengineered process and develops process controls as an integral part of the process.

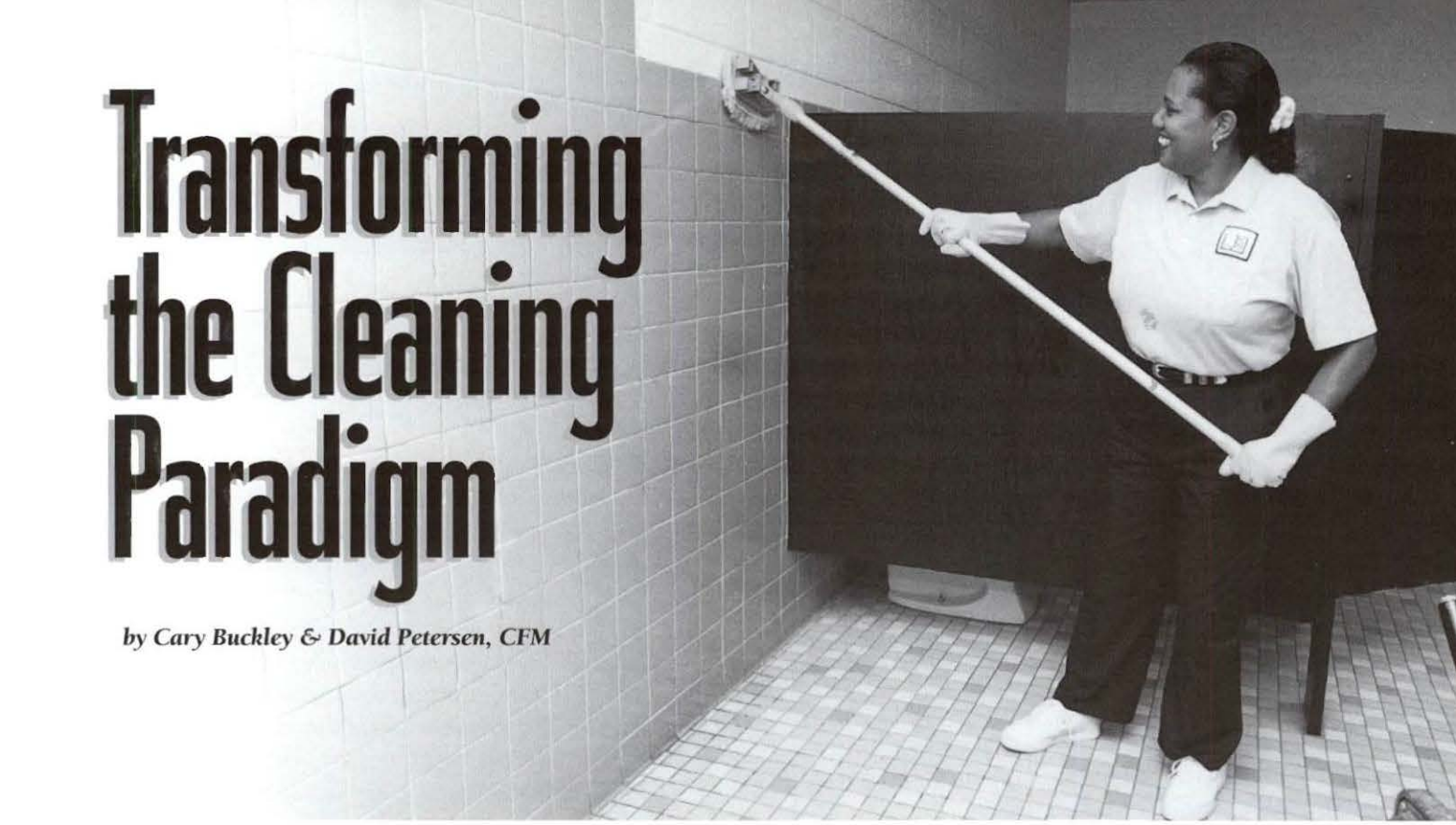
Second, the model establishes an objective, data-based foundation for continuous process improvement and performance management. Using the data generated by process controls and performance measures, the team constantly seeks ways to further improve the process, and to reinforce individual and team performance. This model provides the structure and discipline necessary to develop and sustain service delivery improvements. The quality improvement process—and the path to organizational success—is institutionalized through proactive leadership and empowered teams, and their focus on objective, bottom-line performance results.

### Leadership Implications

The Service Excellence model recognizes that management cannot continue to follow outdated leadership models that limit the responsibility to plan actions, control processes, organize resources, and direct employees to managerial positions. In today's competitive environment, we can no longer afford to operate haphazardly or to underutilize our valuable human resources. We must become capable facilitators of change. We must create cultures of genuinely shared responsibility and collaboration. We must impart the skills of process design, control, and measurement throughout our organizations. We must engender valuable discretionary performance from every member of our organizations by treating them as valuable partners in our businesses, and we must break the counter-productive habit of attempting to motivate through negative reinforcement.

We, as leaders, must accept that our value in the future is not in our positions, our authorities, or our privileges, but in our ability to add value to the core service processes that keep us in business.

# Transforming the Cleaning Paradigm



*by Cary Buckley & David Petersen, CFM*

When the assistant principal of a Fairfax County, Virginia secondary school, arrived at work early one morning in 1996, he found an overstuffed vacuum cleaner bag in the center of his desk. Next to it was an anonymous note from a teacher stating that she brought her own vacuum from home and used it in her classroom—and here were the results. This symbolic wake-up call set the stage for radical change in the cleaning program of Fairfax County Public Schools in Northern Virginia.

There's no doubt that the problem was visible. Steve Showalter, coordinator of custodial operations for Fairfax County Public Schools, recalls vividly: "The quality of cleaning was spotty," he says. "Budget cuts and staff cuts in recent years had gutted performance." There were complaints every day about areas being skipped, wastebaskets not being emptied, and restrooms only partially cleaned.

The problem was not only visible; it was also vast. Fairfax County—a sprawling suburban county adjacent to Washington, D.C.—is the tenth largest school district in the nation. It includes more than 200 public school buildings totaling 20 million square feet and serving 143,000 students.

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The custodial supply budget alone for the system is $1.3 million. In short, cleaning is big business in the Fairfax County Public Schools (FCPS).

### The Outside Threat

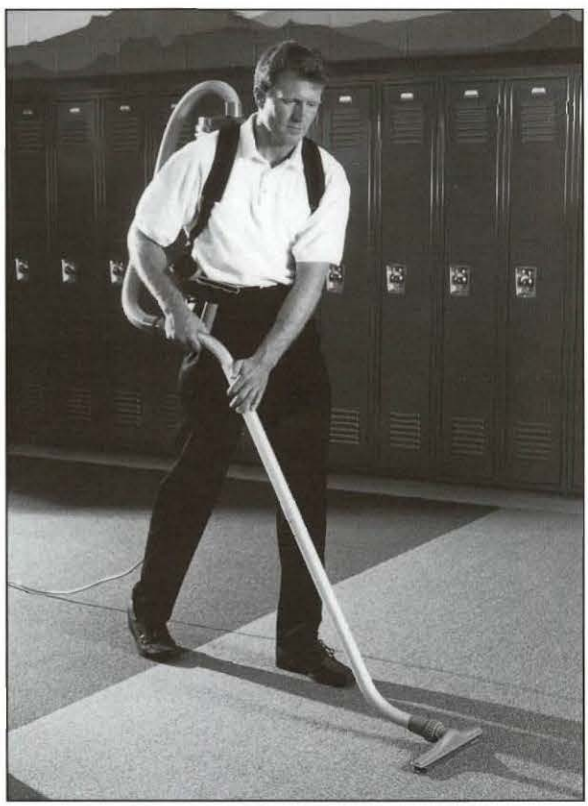
Cleaning was under assault. The schools suffered physically, due to insufficient staffing and budget to do the job properly. The evidence of neglect was everywhere. The generalist approach, a.k.a. zone cleaning, used at FCPS had made each custodian a virtual "jack of all trades and master of none," Showalter says. In the zone method, he explains, "everybody was responsible for everything. Each custodian did every task. The training to do all the tasks was insurmountable. There was no consistency of cleaning from section to section or from school to school." Supervisors had to check every single section if they were to be sure that all tasks were completed—and time did not permit it.

The school board sought another solution. The board requested proposals from outside contract cleaning firms to clean four high schools, with the possibility of eventually outsourcing all schools in the county. The contractors proposed to perform the bulk of the cleaning at night and to save FCPS $400,000 the first year.

A pilot contractor program was implemented in 1994, but was canceled after only one-and-a-half years. Although savings goals were met, quality standards were not. Contracting continued only in administrative centers, but budget talks in 1996 once again turned to contract cleaning in high schools.

Fearing this, the custodians of Fairfax County schools united. They created a six-member Custodians Committee to work with facilities administration and the area plant operations supervisors on a counterproposal. When they were ready, members of the Custodians Committee asked the school board chairperson if they could present their own proposal, which equaled the $400,000 savings sought in the fiscal year 1998 budget. The custodians' plan would save $300,000 annually in electricity (by not needing lights on at night), and $100,000 more sheared off the cleaning supply budget by switching to team cleaning.

The division superintendent and the school board accepted the custodians' proposal, including a pilot program of team cleaning (a.k.a. systematic workloading) to be started in two months. Buckley & Associates, consultants to the Fairfax County operations department, recommended beginning team cleaning with a pilot project so everyone could see what it is, how worker specialization affects productivity, how well it works, and what adjustments need to be made when applying the team cleaning concept to any given situation.



Surprisingly, the custodians at FCPS wanted the pilot project to be the largest school in the county: Lake Braddock secondary school, grades 7 through 12, with 4,000 students and 565,000 square feet to clean—including three main corridors more than 200 yards long. They preferred to tackle this monumental school for two reasons: One, the custodians felt they would have total cooperation from the staff and administration at Lake Braddock school (including its assistant principal, whose desk is no longer sporting bags full of dirt). The second reason is that the custodians wanted to start off *big*.

Lake Braddock school included a huge range of conditions: carpet, terrazzo, tile, rubber gym flooring, new sections, old sections, and usage-intensive classrooms such as industrial arts and computer labs. As Steve Showalter put it, "Everything they'd encounter anywhere else in the system would be in this one setting. In addition, Lake Braddock has community and recreational use that keep it open 7 days a week, 8 to 18 hours a day." The custodians' attitude seemed to be: If we can do it here, we can do it *anywhere*.

### Prep Work

After the school board accepted the team cleaning proposition, the department had two months to train workers in the new method. Team cleaning is based on specialization. Workers are trained to perform one or two tasks using a specific method and following a specific routine designed to yield very high efficiency as well as high-quality, repeatable, consistent cleaning. The department fitted workers with equipment and supplies to further enhance gains in productivity, cleaning quality, and indoor air quality, while minimizing total costs.

For example, the two most vulnerable areas in cleaning schools are restrooms and vacuuming. That's where the most dramatic changes were made in the FCPS system. Concentrating the training on how to work as a team of specialists and what techniques and tools to use to assure high performance spearheaded the change.

### New Techniques

In team cleaning, vacuum specialists use a high-powered portable backpack vacuum. Showalter explains: "Upright vacuums are not very effective in cluttered classrooms. Desks, chairs, tables often need to be moved if you are using an upright." At Lake Braddock, there wasn't time to move the furniture, so only the open high-traffic areas were being vacuumed regularly.

With the backpack vacuum, by contrast, the specialist has much greater mobility and can reach under and around furnishings better. The lightweight, maneuverable wand combined with high suction and four-level filtration allows removing dust, dirt, bacteria, pollen and microorganisms—filtering down to one micron. Specialists using the backpack don't need to move the furniture to vacuum classrooms or offices nor unplug the tangle of wires to vacuum around computer systems.

The streamlining effect of this tool and method allows workers to vacuum much more quickly. "Using an upright, it would take our custodians 14 minutes to vacuum a classroom, and they would have to move everything," Showalter says. "With the backpack, it takes just seven minutes, and nothing has to be moved."

The results are superior, too. Old-style upright vacuums with beater bars tend to put the dust and microorganisms back into the classroom—through mechanical agitation and limited filtration—whereas the backpack ensures that most of the vacuumed particles are not recirculated back. The

backpack vac filters 96 to 99 percent of particles down to one micron via a multi-stage filter system including high-efficiency disposable micro filters that capture dust and mites, improving indoor air quality dramatically.

This is especially significant in schools, where airborne bacteria can play havoc in spreading infectious diseases that raise absenteeism (harmful microbes often ride dust particles). Controlling airborne germs affects attendance, which affects attendance-based school funding, Showalter says.

### More New Techniques

In team cleaning, the restroom specialist is trained to follow a systematic routine, beginning with flushing the toilet first and adding disinfectant to the bowl. Specialists go step by step, working from top to bottom in a precise set of actions and using specified tools. Ph-neutral and/or low acid products are used to maximize safety and prevent marring surfaces.

Restroom specialists and other cleaning-team members are introduced to a portion packaging system for mixing perfect cleaning solutions every time. The right ratio is achieved automatically, through premeasured packets that dissolve in set amounts of water. Controlled packaging cuts supply costs by replacing guesswork with precise measurement—and by saving labor. Specialists carry the packets they need instead of running back and forth repeatedly to the supply closet. Portion packaging also delivers identical solutions for proper and consistent cleaning, so all restrooms attain the same level of cleanliness and disinfection.

A third member of the team—often called the utility specialist—disinfects all doorknobs and countertops every day so germs are not easily spread.

### Conceptual Redesign of Process

Of course, the essence of this successful approach is reengineering the work. Lake Braddock assistant building supervisor used a scientific approach to rerouting the work flow and to teach people how to take advantage of the latest technology, equipment, and tools. This meant delineating routes for each specialist for optimum Point-A-to-Point-B efficiency. They reengineered the cleaning process for effectiveness and health, training custodians in the easiest, fastest, and best ways to perform the job.

This elevates "teamwork" to new levels. Replacing the old zone cleaning method with team-member specialists opens up the potential for huge gains. As new techniques are absorbed, team cleaning "philosophy" begins to crystallize: Custodians take "ownership" of the whole building. They take pride in their work, and they work together in a coordinated framework instead of in the random and spotty individual efforts fostered by traditional undisciplined zone cleaning. The building supervisors of Lake Braddock school have been able to quantify some of the team cleaning gains at Fairfax's pilot school.

### Measurable Results

In the old zone cleaning, every custodian had to have every piece of equipment because all custodians were doing all the same jobs, albeit in different areas or zones. "We were using 20 upright vacuums in Lake Braddock school," which have been replaced by five backpack vacs for the vacuuming specialists, notes Showalter. "We're using the same staff, but the school is cleaner and healthier than ever before. At Lake Braddock, we have five cleaning teams, each comprising three people. Configured as specialists, each team accomplishes in four-and-a-half hours what used to take eight (a 44 percent increase in productivity). With the time gained from everyday cleaning efficiency, we are now able to add deep-cleaning tasks such as carpet extracting, which prolongs the life of carpets and saves money," Showalter calculates.

He even notes that the life of classroom computers is extended because of the amount of dust that is now removed via the high-suction backpack vac. "Team cleaning introduces tremendous opportunities for cost-saving," he says.

The proof of progress lies somewhere else as well. Every consultant and operations manager knows that it is the end users who have the most to gain or complain about. In the case of Fairfax County, Showalter is enthusiastic. He produces a litany of typical positive feedback from teachers and administrators after just one month of pilot project operations at Braddock school:

"I can see the difference since team cleaning."

"It doesn't just look clean; it *smells* clean."

"The school has never been cleaner."

"I can see the nap on the rug again."

The teachers love it, he says. Cleaning teams come into every classroom every day. The vacuum specialists even vacuum the chalkboard, the chalk tray and erasers—without redistributing the dust. Showalter expects that allergies and absenteeism will decrease accordingly. In fact, parents of one student told Lake Braddock's principal that they've already been able to cut back on their child's allergy medication.

Equipment costs have plummeted because each custodian no longer needs to be outfitted to perform every job. Showalter envisions four or five backpack vacuums for every school instead of 15 or 20 uprights per school, a move he expects will produce big long-term savings in capital investment and repairs.

### What's Next?

Transferring the pilot project at Lake Braddock school to the entire Fairfax County Public School system will take some doing. "We'll start in 22 more schools by this July," Showalter says. "While the schools are closed this summer, we can experiment and finetune the team cleaning method at each site."

Within three years, all schools in Fairfax County will be converted to the team cleaning specialist system, he predicts. The county plans to set up a training school where all new hires will be trained using the same techniques and standards. After three to eight weeks of training, these hourly employees will be hired as full time custodians for the county schools as vacant positions become available. "Ultimately, all 1,200 custodians in the Fairfax schools will be taught the same way," Showalter says. While the projected savings for Fairfax County was originally $400,000 annually, he foresees the overall long-term savings as "astronomical."

There's a danger in success, Showalter cautions. "We're so energized by the results at Braddock that we want to change everything immediately. But we know we have to go step by step."

### School Lessons

Now that Lake Braddock secondary school is operating smoothly with team cleaning, Showalter offers recommendations to other school systems contemplating the reengineering of their school cleaning programs. His advice is quite specific:

1. Talk about it extensively—discuss pros, cons, obstacles, benefits. Be candid and air the issues.
2. Read the literature about team cleaning so you know what to expect and what it requires.
3. Get an experienced consultant to help you build understanding and political support for reengineering the cleaning program and for training team specialists.
4. Hold regular meetings to discuss the implications of team cleaning with those who will do the work and with those who will supervise the work.
5. Use your consultant to help work out a master plan, training sequences, and work flow charts defining tasks, realistic times, standards, and periodic benchmarks for measuring success.
6. Put it in writing. Job assignments and task identification should be crystal clear and tracked on paper. (For schools interested in advanced technology, computer software is available to manage and link scheduling, workloading, timekeeping, and other elements. These can be integrated with accounting and payroll systems.)
7. Take your new system and build on it. Start a pilot team cleaning project; modify it as needed; transfer the team cleaning methodology gradually to other schools. Make training an ongoing part of your program.

The team cleaning method, evidence shows, creates a dynamic change in thinking that means big savings in school cleaning budgets and a healthier environment for students and teachers. It is an *educated* approach to school facilities maintenance that is changing the futures of school custodians and those they serve.

# Facility Asset Management

## Space and Serviceability

*by Matthew C. Adams, P.E.*

The communication of issues surrounding buildings, space, deferred maintenance, and maintenance is still a sticking point for most facility managers. That is, the language that facility managers speak is different from that of the business officers. It seems that the business office operates within the realm of space variables such as: space per faculty member, lab bench feet per graduate research assistant, grant dollars per square foot, and overhead cost recovery dollars per department. While the facility manager's jargon includes phrases such as: backlog of work orders per building, energy costs per building, life cycle, and planned and preventive maintenance. The common denominator has always been the space that the institution collectively operates. Any language that an institutional administrator uses has some consideration for space.

The Government of Canada has moved well ahead in the understanding that space is the common denominator in languages of buildings and facilities. In fact, their government has spent considerable resources to create a language of sorts that can bridge the communication gap between various institutional building owners, occupiers, and managers. This language is composed of both a philosophy and a specific set of terms. The terminology is not all new, but simply more specific and succinct. For example, the exact meaning of the following terms becomes critical:

**Building**—a physical artifact, a shelter comprising a partially or totally enclosed space, erected by means of a planned process of forming and combining materials.

**Facility**—may be within a building, or a whole building, or a building within its site and surrounding environment; a construction not necessarily a building incorporating both the object and its use.

**Building Performance**—the behavior in service of a construction as a whole or of the building components.

**Facility Serviceability** —the capability of a facility to perform the function(s) for which it is designed, used, or required to be used.

In the past, the issues of deferred maintenance, capital repair, maintainability, and energy usage were disconnected from the building occupant issues to a greater extent. However, in the context of serviceability, all issues are brought together. Every person who has some functional connection to a facility has the potential to impart one or more unique gauges upon the same. The variety of participants are referred to as "users" in the largest sense. Facilities management staff fall into this category within the context of building performance and its influence on facility serviceability and facility management serviceability itself. A business officer or college dean is a user as well. The users derive a use or function from the building or facilities and that function is measured. The measurement of that function is based on the facility's success or relative order of magnitude in providing for that user need. As such, it is the users who are challenged to accept or even create new measurements. The measurements must be empirical, this is the commonality of it all. Each user has one or more measurements that are empirical, which allows multiple measurements to be weighted, indexed, or modeled as elements of a comprehensive system of serviceability measurement. Naturally, there are measurements that are common to all facilities such as energy performance, lighting supply, egress capacity, handicapped access, temperature control maintainability, etc. These measurements are comparable from one classification of facility to the next. An office building's general serviceability may be compared to that of a college classroom. On the other hand, there are specific measurements that are unique or more weighted for specific facility classifications, e.g control of air changes per minute, security, electrical supply conditioning, acid drainage, etc. The empirical measurement of the latter serviceability elements allow more exacting benchmarking, design analysis, and cost benefit analysis involving specific facility types.

The uses for serviceability measures of educational facilities is profound. Now, as our industry slowly moves toward a space-based reconciliation of facility assets, there is a theoretical impasse. Colleges are starting to ask the right questions about quantity and quality of space in the most general

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sense. The XYZ University has 1,400 gross square feet per faculty member and the campus has a deferred maintenance backlog of $15,000,000. However, these overarching revelations do not have a specific impact on facility design, renewal, renovation, or operations decisions. The real numerical data is not there. If, however, the serviceability measures of each facility of an institution are known, logical decisions become more practical and meaningful.

Let's take the residence life facility assets of a campus as an example. A set of serviceability measures for all users is compiled and numerically set to scale. For the sake of simplicity, the users are students, residence assistants, security officers, and facility management staff. The serviceability of each facility is calculated from a composite of the various measurements. The students perspective may measure by scale the percentage of private space per unit. The facility management users may measure the increase or decrease scale of custodial requirements resulting from suite style layouts. All measurements are rolled-up for an overall serviceability rating for a facility. However, meaningful decisions are made from subsets of the data. The facility management group is given the tools to engage all users in the resource allocation decisions for construction, renovations, and management. A functional committee may make the determination that investing redesign and renovation dollars into a facility with very low student user serviceability may provide good return for investment. This strategic investment then serves to raise the overall serviceability score of the residence life inventory. Most importantly, the improvement is measurable, and, if success or lack thereof is measurable, accountability is achieved.

The Canadian Government and the American Society for Testing and Materials (ASTM), have developed a solid set of serviceability measures for office space and other facility classifications—most of them commercial. Approximately 70 percent of these measures are practical for educational facilities. The remaining measures are incomplete, but there are individuals and groups examining this issue. Nevertheless, the philosophy of serviceability measurement is truly appropriate for educational facilities. It can be applied without a consensus on nationwide educational measurements. Most institutions will see the need to create some of their own measurements regardless of standardization.

To learn more about serviceability or to purchase a copy of *Performance of Buildings and Serviceability of Facilities* by Davis and Ventre, contact ASTM at 610-832-9585 and request publication #1029. Please be aware that this publication is a collection of technical proceedings and white papers—it is *not* light reading.

# Software & Solutions

## Asset Management Application Helps Forecasting

*by Howard Millman*

Not every road leads to Oz, nor does every capital request lead to funding. How's your track record? At a recent regional conference, I listened to the director of a Midwestern university's physical plant department describe his problem and then share his success secret.

He recognized that the trustees rejected his requests because his group had a credibility problem. It's not that the trustees did not believe him, but he could not persuasively make his case without backup; he needed hard numbers before they would pony up any cash.

Does this scenario play out in your facility? The speaker commissioned a custom software application to capture and present facility audit information. He estimates it cost them "about $15,000 and still counting." Fortunately, it's successful.

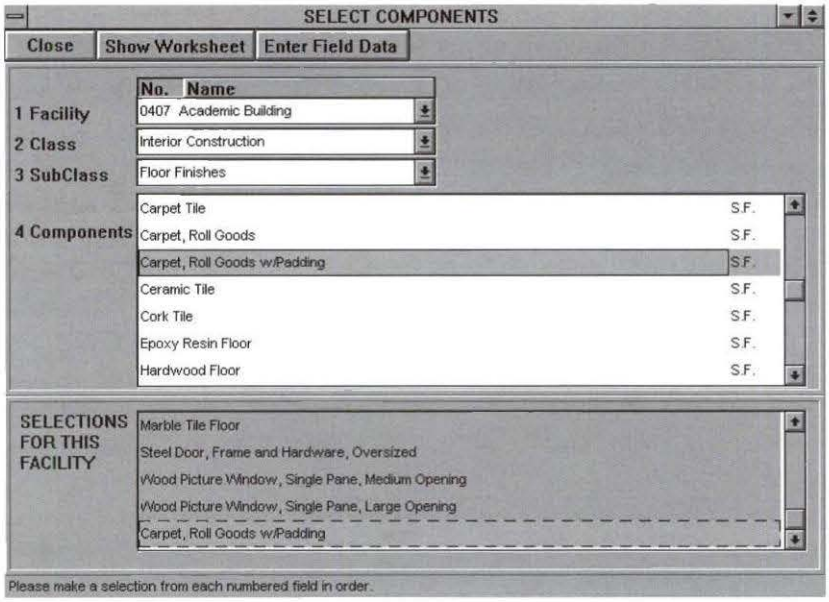
You, however, may want to investigate an auditing program, Facility AuditMate, from Diversified Intelligence. It uses custom algorithms to track, analyze, and chart deferred maintenance, asset replacement costs, and optimal replacement dates. The program runs under Windows 3.1 and Windows 95.

Working with a fully functional demo from Diversified, my impressions are that the product lives up to the vendor's promises. Incidentally, the software was developed by Jay Oschrin, an experienced facility management pro.

### GIGO: Garbage In, Garbage Out

One concern regarding Facility AuditMate, and all such programs, is dealing with the time consuming process of collecting and entering the required data. For each building (asset) you want to track, you will need to know its year of installation or construction and quantity (for example, square feet, linear feet, each or lump sum). While this one-time effort of keying in the data is not difficult, in fact it's almost a no-brainer, it will prove time consuming in direct proportion to the quality of your existing blueprints and records.

Diversified does its share to help accelerate entering the information. For example, Facility AuditMate use a 12-level classification system to identify all of a building's components. These include the superstructure, foundations, roofing, interior finishes, plumbing, electrical, and so on. In turn, each of these components have sub-groupings that further define the building's physical elements. For example, interior finishes sub-listings include concrete block, painting, carpeting, and many more. These detailed classifications unburden you from having to analyze every building's features and reduces the chance of you forgetting to include a building component.




***Individual building components are selected for each facility from easy-to-use pick lists. There are over 950 components to choose from.***

Diversified supplies its own unit costs and predicted lifespans for all of the sub-groupings in the program. You can edit any of these constants, including an inflation rate, to reflect your own values.

From there, the program takes over. It computes the lifespan, current age, next renewal (replacement) date, renewal cost, and current level of deferred maintenance. Diversified provides six predesigned reports and two graphs to slice and dice the data in order to help you persuasively make your case.

To receive more information about Facility AuditMate 2.0, contact

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***Howard Millman operates the Data System Services Group, a problem-solving consultancy group based in Croton, New York that helps universities and university hospitals automate their facility management process. He can be reached at 914-271-6883 or by e-mail at hmillman@mcimail.com.***

Diversified Intelligence at 804-984-5139 or by e-mail at telligence@aol.com. The package price is $3,000 with additional users at $750 each. Price includes six months telephone support. Annual maintenance is available at 25 percent of the initial cost.

### Disinformation Bests Datinformation

When Gillette invented the safety razor, they practically gave away the handles. Then, they sold everyone the blades for the rest of their natural lives. Today's software is a lot like that. Lately, I've received several calls ranging requesting help to outright complaints. They come from schools that find themselves joined at the hip to a software vendor. For a variety of reasons, ranging from lack of scalability to vendor bankruptcy, these schools want out of their commitment.

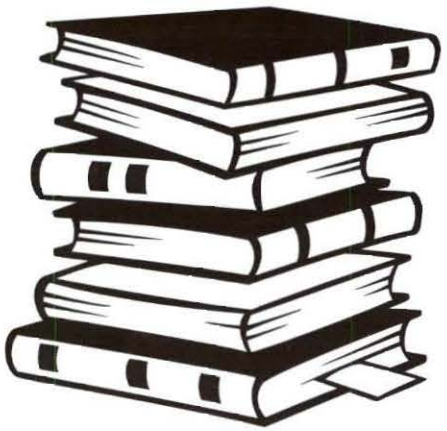
In some cases, they have years worth of data stored in the application which they definitely do not want to lose. The luckier ones had programs which could export that data, usually as something called ASCII-delimited text. Given that fortuitous circumstance, they could import their old data into their new system.

The less fortunate universities faced either an expensive and timeconsuming conversion or the prospect of having to abandon their historical data and start fresh. Neither option had much appeal. The three schools I spoke to more than a year ago are still agonizing over making this decision. Each day sees more data entered into the old system thereby making the ultimate, and probably inevitable conversion, all the more painful.

What's the moral? When you invest in an application, aside from investigating its maintenance and financial management features, verify its export capabilities. You want to shave costs, not have the vendor in your life forever.

# The Bookshelf

***Book Review Editor:*** **Dr. John M. Casey, P.E.**



## This installment

of The Bookshelf presents four reviews which highlight the dynamic nature of higher education. Each publication defines the complex reality of the facilities manager through concepts which may seem unrelated, but which are all variations on the *change* theme which is pervasive in the academy. In fact, *change* is taken as a given, and the resultant topics suggest and define the need for *planning* of some sort to cope with specific change-related problems.

The themes discussed range from the general to the specific. The former include Lynn Seiler's report on SCUP's major new work, which reconfirms the premise that academic planning is the cornerstone of an institution's proactive plan for future success. The observations of Larry Wakefield concerning the scarce resources dilemma in the academy also spotlights the need to respond to shrinking budgets by promoting efficiency and accountability. Two publications covering specific higher education problems complete the books reviewed. George Hume's discussion of the classroom design book reflects his use of the manual's prior edition, adding a comparative insight to his observations. Finally, John DeLaHunt reviews the need for each member of the academy to have a formal plan to respond effectively to a natural disaster or emergency; John uses his unique perspective as a safety guru to add credence to his comments.

—JMC

***John Casey is manager of the engineering department of the physical plant division at the University of Georgia, Athens, Georgia. If you are interested in reviewing a book for The Bookshelf, contact Casey at jcaseype@uga.cc.uga.edu.***

* * * *

**Doing Academic Planning: Effective Tools for Decision Making**, ed. by Brian P. Nedwek. Ann Arbor, Michigan: Society for College and University Planning, 1996. 155 pp, softcover.

American higher education has been shaped by defining events in the nation's history. The passage of the Morrill Act to create the Land Grant Universities and the GI Bill following World War II encouraging widespread access to colleges and universities are often cited as events that had both immediate and continuing impact on higher education. Editor Brian Nedwek, associate provost at Saint Louis University and recent president of SCUP, suggests that two equally important influences will change the future of higher education and challenge academic leaders and planners to prepare for those changes. The first is the introduction of information technology into every facet of higher education at a breathtaking rate that is accelerating. The second is the transition from a provider-centered culture where access is of principle interest, to a learner-centered world in response to stakeholder discontent with quality. Changes within academe are needed to respond to issues of quality, accountability, and institutional effectiveness.

*Doing Academic Planning* compiles the work of 18 authors into 14 chapters with topical expertise organized into eight areas including: environmental scanning and related policy analysis tools, curriculum planning,

enrollment management, human resource planning, planning for information technology, student services, integrating academic with facilities and budget planning, and accountability tools. Each author provides a connection to the pressing issues and describes how their areas may contribute to understanding change and preparing for the future. Each chapter also has supplemental print and electronic reference sources to guide the reader's search.

In the opening chapter, Marie Zeglen describes policy analysis as a systematic process for reducing issues or problems to actionable solutions. In policy analysis, the problem is not taken for granted—it is analyzed, clarified, and crafted in such a way as to allow a solution. Thomas Mecca then outlines environmental scanning as a way to identify trends, events, and human interventions in the external environment that could affect the future, and describes how to integrate that knowledge into planning strategies. Gertrude Eaton and Helen Giles-Gee provide a model for both the content and process of program review to guide decisions about program quality improvement. Kathleen Corak and James Croonquist propose a five-step model for constructing cooperative curricular agreements to establish alternative modes of program delivery that will reach new markets and result in new revenues. Michael Middaugh and Dale Trusheim describe strategies for acquiring more useful data to assist in the recruitment and retention of students, and they discuss how student financial aid plays an increasingly important role in the admissions marketplace.

Carol Everly Floyd describes the role human resources planning may play in facilitating the change in academic culture needed to adjust to quality and accountability in the learner-center environment. Linda Fleit details how the assessment of information technology resources is essential to the allocation of resources to meet strategic goals. Susy Chan suggests how the role and benefits of information technology will be incorporated in the pursuit of learner-centered strategic planning.

Diana Sharp and G. Gary Grace describe how to integrate academic and student development activities to create synergy between the subcultures that often separate intellectual from developmental growth of students.

Next, Gretchen Warner Kearney and Stephen McLaughlin discuss ways to develop, implement, and assess the effectiveness of planning co-curricular programs. Dilip Anketell encourages the active involvement of facilities planning in all areas of the academic community throughout the planning process to ensure facilities will be available to successfully implement strategic change, and Thomas Anderes then advises that plans and processes

must be connected with budget development and funding allocations.

In the final chapter, Brian Nedwek discusses the risks and benefits of using performance indicators to link quality and accountability in an effort to recognize and deal with higher education's fall from grace. He also makes a call for comprehensive action throughout academe to begin planning to meet the challenges of the consuming public and political/funding authorities.

This book is a necessary addition to the reference library of every facility planner/manager. The changes higher education is facing require an orchestrated response from all members of the academic community, and the authors have provided a view of how each of their areas may be poised to play a role in developing planning strategies. Facilities planners work with every area of the university in the development of facilities solutions or operations, and often find themselves in the unique position of knowing more about what is happening on a campus than nearly any other academic or administrative leader. This book will help all of us make well-informed decisions as we meet the challenges facing our institutions.

**Lynn Seiler**
Space Management
Iowa State University
Ames, Iowa

* * * *

**Disaster Recovery Yellow Pages**, ed. by Steven Lewis. The Systems Audit Group, Inc., 1996. 281 pp., looseleaf bound.

No one likes to find out that his or her facility, staff, and emergency plans are not up to the task of managing and recovering from an unexpected event, like a power outage, fire, terrorist threat, flood, blizzard, or any of a host of others. In this era of doing more with less, who among us affords the time, all the time, required to thoroughly plan for all disasters and for all recovery needs?

*The Disaster Recovery Yellow Pages* is packaged as a shortcut through some last-minute recovery planning. Need a point-of-sale tracking system yesterday? Need an outside company to clean up after the hostage situation that would never happen in a million years? Now there's a quick and easy way to locate providers of these services. The Yellow Pages lists 2,000 organizations by service category: service providers, suppliers of replacement facilities, suppliers of new and used recovery equipment, software suppliers, and training providers, all listed alphabetically.

Unfortunately, the most useful sorting of the information, by region or state, is glaringly absent. Sifting through entries for furniture cleaning companies that are all on the East Coast is probably of questionable

value for a facility in Oregon. Since the company lists are clearly pay-for-play, they cannot be close to complete, which further limits the list's value; the small, local company with excellent response time and service may well be excluded, through no fault of their own. This resource is no substitute for a detailed search for local providers of needed services.

However, Lewis includes, as an apparent forethought, six pages of disaster recovery hints that are probably more helpful to the facility with incipient disaster recovery planning than all the entries in the balance of the book combined. Even well-organized and well-tested plans might find a nugget or two in the introduction. Most facilities should also find the table of contents a useful list of the kinds of companies that need to be included in disaster recovery plans.

In short, Lewis has provided a resource with limited tactical value in an emergency, but which could well provide both questions and answers for those devising or revising strategic disaster recovery plans. Nothing replaces prior planning, not even the Disaster Recovery Yellow Pages. But this resource does provide an option for shortening the valuable time required for that prior planning.

**John DeLaHunt, EHS & RSO**
Environmental Health and Safety Manager
The Colorado College
Colorado Springs, Colorado



* * * *

**Classroom Design Manual, 3rd Edition**, by Dr. Sue Clabough. College Park, Maryland: University of Maryland, 1996. 90 pp, softcover.

Good classroom design should be fundamental in the provision of instructional spaces. After all, classroom design is an opportunity for research and experimentation in institutions that are supposed to excel at that sort of thing. A check into many classrooms and discussions with those who use them, both instructor and instructed, often reveals frustrating inadequacies.

A project initiated in the late 1980s by Robert Allen of Penn State University led to the development of the first edition of this classroom manual, *Design of General Purpose Classrooms and Lecture Halls*. In its third iteration, now entitled *Classroom Design Manual* it is evolving into an indispensable tool both for the institution planning new classroom facilities and for those who wish to overcome the shortcomings of their present inventory.

As a user of the second edition, I welcomed the reorganization, simpli-

fication, and expansion of this new third edition. A new introductory chapter discusses the elements of planning required to assess needs, ensure good management practices and anticipate changes to teaching technology.

This manual then, charts the path out of the classroom complaint wilderness. It does it in a clear, straightforward manner. It appears comprehensive, if not exhaustive. I tested it against my pet peeves: electrical outlets for overhead projectors and confusing light switches. The manual proposes sufficient electrical distribution to eliminate the need to plug the overhead projector in directly under the center of the blackboard, and the light switch labels are suggested to be clearly evident, clear, and not to be confused with any other control. I was satisfied.

Then I read that switches controlling outlets in the room should be designed so that they cannot be confused with a light switch. I had not thought of that, but you can bet that I will not forget it. I can imagine the e-mail from a professor who has just had his computer turned off unexpectedly in the middle of a presentation for the third time during the semester. Such examples underscore the value of this manual; it charts the pitfalls that have befallen our colleagues in a wide variety of situations so that we can avoid them.

As the name suggests, the book concentrates on the design and servicing classrooms in all their forms; seminar rooms, lecture halls, and general purpose classrooms. It goes on to discuss specialized classrooms such as computer-equipped classroom and interactive video classrooms, but does not refer to the special requirements of the classroom set up to allow the use of computers brought in by the students, a frontier just being explored at my university. As the standards settle down and the designs become more supportive, I am sure that this will be included in subsequent editions.

A future edition should also include revisions to the chapter on classroom management. The checklists for assessing classroom attributes and capabilities are quite clear and useful, but a section on classroom management contains a confusing sample form, which I only began to understand when I referred back to the second edition. The earlier copy has suffered at the hands of some editing gremlins that make comprehension almost impossible.

Despite these concerns, I consider this a valuable manual. I think that a classroom that meets the relevant parameters laid out in the book would be a supportive environment for teaching, and it's available for less than the cost of one chair.

**George Hume, B.Arch., M.Sc.**
Director, Campus Planning and Construction
Ryerson Polytechnic University
Toronto, Ontario, Canada

* * * *

**Strategies for Promoting Excellence in a Time of Scarce Resources**, ed. by David W. Breneman & Alton L. Taylor. San Francisco: Jossey-Bass Publishers, Inc., 1996. 94 pp, softcover.

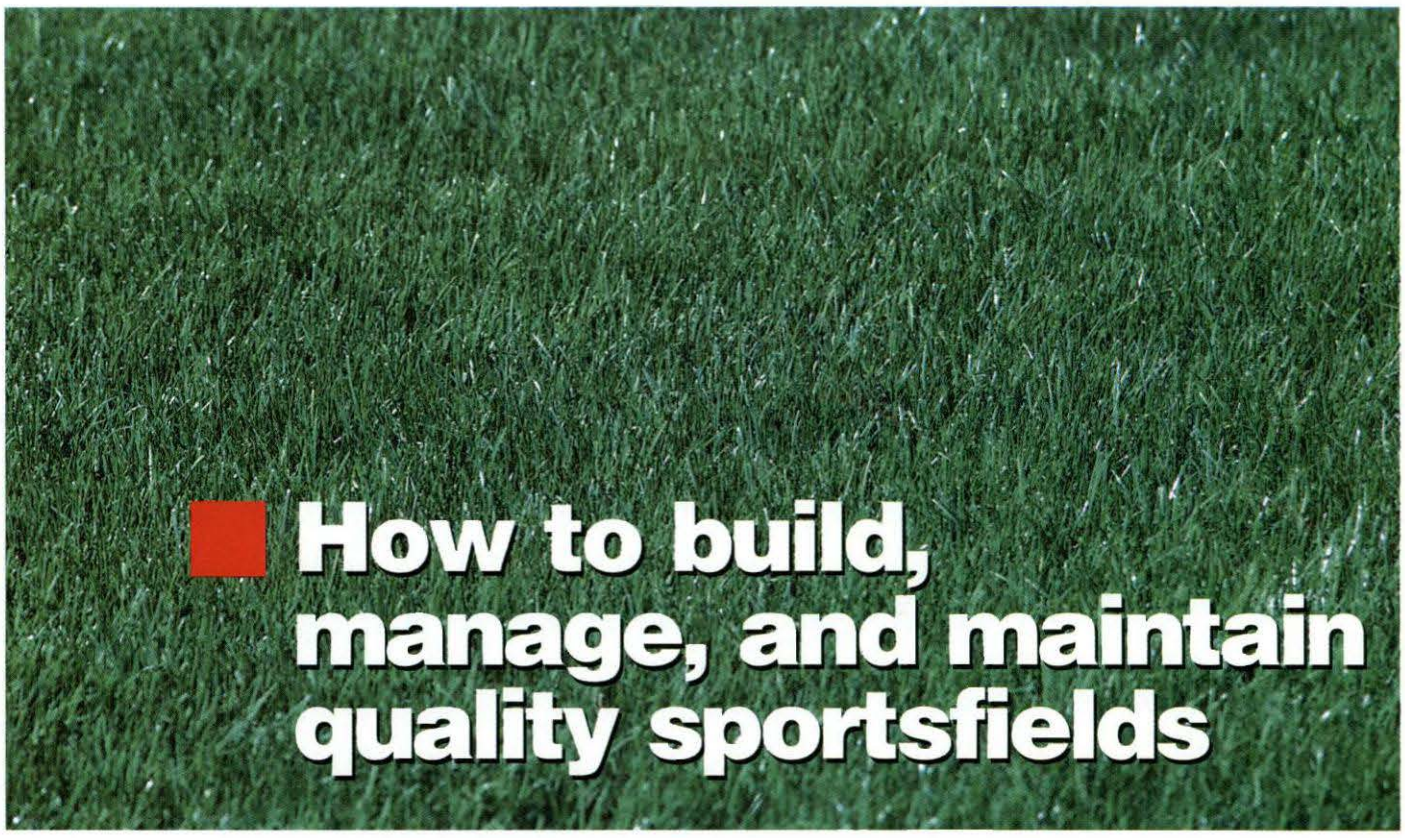
This volume is part of the *New Directions for Higher Education* series published quarterly by Jossey-Bass. The editors and chapter contributors are all faculty members, doctoral students, or administrators at the Curry School of Education at the University of Virginia. With a broad topic and a limited format, the authors highlight ways to manage revenues and expenditures throughout the institution without sacrificing the fundamental mission of teaching, research, and public service. This is not a detailed "how to" type of book.

The opening chapter, "Financial Stress and the Need for Change," makes the point that recent pressures on funding and increases in costs are not temporary, but are permanent changes that require a different set of solutions. The chapter includes a useful ten-year overview of enrollment trends, costs and affordability comparisons, government appropriation declines, and related trends.

Chapter Two, "Responses to Reduced State Funding," uses a logical "framework" for categorizing the various ways public institutions have responded to their recent fiscal challenges. The framework's four broad categories are: expenditure control and budget management; changes in academic programs; increasing other sources of revenue; and redefining and reorganizing ways of doing business. Expenditure control and budget management include increased monitoring of expenses, across-the-board cuts, deferred maintenance, slashing line-item budgets, and setting tighter rules for budgeting. Changes in academic programs include reviewing, reducing, eliminating, and consolidating programs, and increasing existing programs or adding new programs often through "growth by substitution." Increasing other sources of revenue includes fund raising, raising tuition, and other less traditional methods such as industrial parks, land development, laboratory management, and facility rental.

Redefining and reorganizing ways of doing business consists of decentralizing, privatization, and increased use of "business" practices such as TQM, CQI, and BPR. This chapter concludes with the argument that we must recognize the deficiencies in our past incremental and across-the-board approaches to fiscal crises, and that the best approach is the use of multiple strategies based upon long-term

*(cont. on p.64)*



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(cont. from p.62)

objectives derived from the institution's overall vision and mission.

The next three chapters address the traditional instruction, research and public service functions. Chapter Three, "Instructional Technology to Enhance Teaching," may be interesting if you have participated in designing and building multimedia classrooms. Chapters Four and Five have little relevance to the facilities manager. Chapter Six, "Role of Environmental Scanning in Effective Fundraising," provides a nice thumbnail explanation of the various aspects of fund raising.

Chapter Seven, "Restructuring to Sustain Excellence," returns to and somewhat repeats the approach of Chapter Two saying, "No one strategy or combination of strategies provides a blueprint for successful management." Short-term responses to funding problems include "retrenchment," pay cuts, hiring freezes, and deferred maintenance. "Restructuring" is more future-oriented in recognition that permanent, fundamental change is required in the way we conduct our business. What follows are other examples of general types of strategies, such as position cuts and vacancies, increased class sizes, freezes on purchases, and consolidating or decentralizing functions with a particular emphasis on reallocation.

The final chapter concludes with the authors arguing that institutions are better positioned for change when all members of the community have a clear, shared purpose. I appreciated the warning, "Reform does not necessarily follow the corporate model, which has as yet been unable to sustain itself without using such extreme measures as downsizing and exporting work to developing economies."

This book will help with your sense of perspective by realizing that demands placed on you for efficiencies, economies, and accountability are common throughout the institution and the higher education community. It could be useful if you need support in arguing for clarified values, vision, and mission with a long-term strategy rather than continuing to suffer through repeated "short-term" funding cuts although it will not provide many specific ideas for action.

**Larry Wakefield**
Associate Vice President for Business and Finance
Tennessee State University
Nashville, Tennessee

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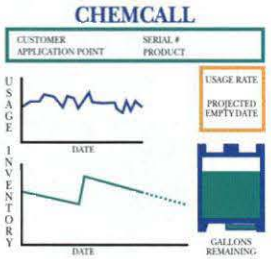

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### APPA Events

For more information on APPA seminars and programs, contact the APPA Education Department at 703-684-1446, ext. 230 or ext. 231.

**Sep 14-19—*Institute for Facilities Management*.** Toronto, Ontario, Canada.

**Jan 25-30, 1998—*Institute for Facilities Management.*** Houston, Texas.

### Regional Meetings

**Sep 15-17—*AAPPA Regional Meeting.*** New South Wales, Australia. Contact Peter Brennan, University of Technology/Sydney, p.brennan@ats.edu.au.

**Sep 17-20—*RMA Annual Meeting.*** Jackson Hole, WY. Contact Wayne White, Utah State University, 801-797-3128.

**Sep 20-24—*PCAPPA Annual Meeting.*** San Francisco, CA. Contact Jean Little, University of California/Berkeley, 510-643-7406.

**Sep 27-Oct. 1—*SRAPPA Annual Meeting.*** Miami, FL. Contact Mike White, University of Miami, 305-284-3051.

**Oct 5-8—*ERAPPA Annual Meeting.*** Toronto, Ontario, Canada. Contact Bob Carter, McMaster University, 905-525-9140.

**Oct 12-15—*MAPPA Annual Meeting.*** Columbus, OH. Contact Becky Hamilton,Ohio State University, 614-292-1380.

**Oct 18-22—*CAPPA Annual Meeting.*** Omaha, NE. Contact Ed Bogard, University of Nebraska Medical Center, 402-474-6307.

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### Other Events

**Aug 6-7— *1997 MAPPA/PGMS Grounds Conference.*** William Rainey Harper College, Palatine, IL. Contact Bob Getz, 847-925-6350.

**Aug 7-8—*Public School Planning and Design.*** Cambridge, MA. Contact Harvard University Graduate School of Design, Professional Development, 617-495-1680.

**Aug 8-10—*"Making Transformation Work on Your Campus" Workshop.*** Newport Beach, CA. Contact Cindy at the Society for College and University Planning, 313-998-6966.

**Aug 11-13—*The U.S. Environmental Laws and Regulations Course.*** Hilton Head, SC. Contact Jesus Ferro at Government Institutes, 301-921-2345, ext. 269

**Aug 15-16—*"Techniques for Trainers" Seminar.*** San Diego, CA. Contact the International Executive Housekeeper's Association, 1-800-200-6342.

**Aug 18-22—*Asbestos Abatement for Inspectors and Management Planners*.** Salt Lake City, UT. Contact Registration Coordinator, Rocky Mountain Center for Occupational and Environmental Health, 801-581-5710.

**Aug 21-22—*Association of College and University Building Services Supervisors Conference.*** University of Illinois. Contact Virginia Tomlison, 217-333-1393.

**Aug 25-29—*National Fire Alarm Code & Automatic Sprinkler Systems Seminar.*** Philadelphia, PA. Contact NFPA 800-344-3555.

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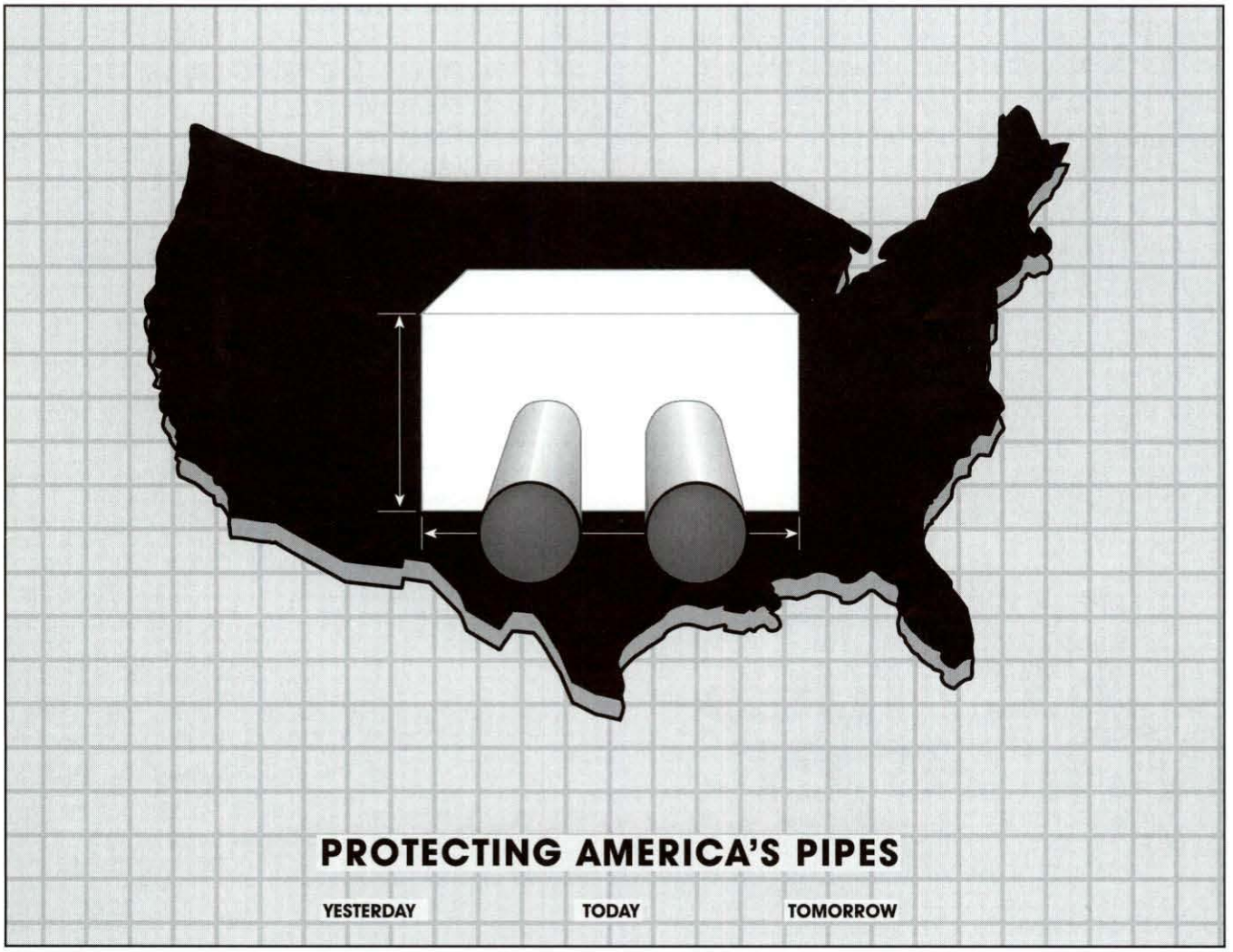


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