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MAY/JUNE 2009

INSIDE

Getting Started
with BIM

BIM & TCO

Whole Building
Design Guide

Using UNIFORMAT II

BIM

BUILDING INFORMATION MODELING

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BIM BUILDING INFORMATION MODELING

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Getting Started and Working with Building Information Modeling

By Dana K. Smith, FAIA

The basic premise of BIM is the ability (by different stakeholders at different phases of a facility life cycle) to insert, extract, update, or modify information. BIM is a shared digital representation founded on open standards for interoperability.

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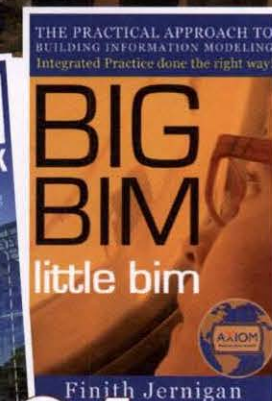
Compiled by Gerry Van Treeck

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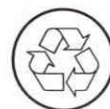
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In this issue you will find a wealth of information on the topic of Building Information Modeling, or BIM. Three features and two columns address this expanding planning and design concept, with particular focus on how BIM may affect the educational facilities enterprise.

A number of U.S. federal agencies, associations, and leaders in the business community have come together under the auspices of the National Institute for Building Sciences (NIBS) to develop BIM guidelines and standards, as well as to share best practices. And for anyone working in the planning, design, and construction world, the Whole Building Design Guide (www.wbdg.org) should be a regular resource on all aspects of building-related guidance, criteria, and technology. Many thanks to Deke Smith of NIBS, and Bill Brodt of NASA, for their dedicated work on BIM standards and the Whole Building Design Guide.

APPA's Code Advocacy Task Force continues to work aggressively in monitoring the important code and compliance issues affecting educational facilities and sharing their findings, opinions, and recommendations to the APPA membership through APPA's website and the Code Talkers column. In this issue, David Handwork discusses the enforcement of ASHRAE Standard 90.1.

You'll also find in this issue several articles by APPA's leadership. President Bill Elvey writes a book review on one of Stephen R. Covey's books, in advance of Covey's keynote presentation at APPA 2009: Focusing on the Critical Few. The conference takes place July 8-10 in Vancouver, British Columbia.

Bill also cowrote the Knowledge Builders column with Past APPA President Maggie Kinnaman. Their topic is the result of a survey conducted by APPA and Educational and Institutional Cooperative Purchasing, and the pending next steps in providing sample contracts for a number of key facilities functions.

In addition, APPA President-Elect

Polly Pinney writes about her participation in a recent Women's Leadership Institute, and the valuable networking and learning opportunity the event provided to several APPA members.

Finally, the Membership Matters column is an especially interesting one, written by Dan Whitezell, a longtime business partner member of APPA. Dan is vice president of marketing and sales for Spirotherm, Inc., and he currently serves as an At-Large member of the APPA Board of Directors.

In the article, Dan shares his experience as an APPA business partner member over the years, and the progression of APPA in its understanding and inclusion of business partners into the association. APPA has worked hard to elevate the educational facilities professional, but we've also worked hard to enhance the value and visibility of our business partner members and to view them as important resources for our practitioners working at our colleges, universities, K-12 schools and districts, museums, and other educational institutions.

This provides me the opportunity to thank all of our APPA business partner members, conference exhibitors, project sponsors, and magazine and newsletter advertisers for your continued support of APPA and the educational facilities profession. We look forward to many more years of collaboration. 

Coming in July/August 2009

- APPA 2009: Focusing on the Critical Few
- Features from Keynoters Covey, Abrashoff, and the Heath Brothers
- Using the Lean Approach

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About APPA

APPA promotes leadership in educational facilities for professionals seeking to build their careers, transform their institutions, and elevate the value and recognition of facilities in education. APPA provides members the opportunity to explore trends, issues, and best practices in educational facilities through research, publications, professional development, and credentialing. Formerly the Association of Physical Plant Administrators, APPA is the association of choice for 5,200 educational facilities professionals at more than 1,500 learning institutions throughout the United States, Canada, and abroad. For more information, visit us at www.appa.org.

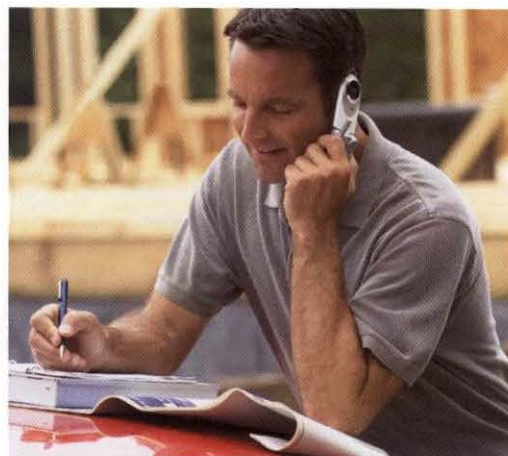
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facilities digest



2009 APPA ELECTION RESULTS

APPA is pleased to present the new officers for the 2009-2010 administrative year:



PRESIDENT-ELECT:

Darrel W. Meyer
Director of Facility Services
Metropolitan Community
College/Kansas City



VICE PRESIDENT FOR PROFESSIONAL AFFAIRS:

David Cain
Associate Vice President
California State University –
East Bay



SECRETARY-TREASURER:

Nancy K. Hurt
Associate Director,
Real Estate Office
Colorado State University

The candidates will take office at the APPA 2009 conference in Vancouver, British Columbia, Canada, July 8-10, 2009. Thank you to all the primary institutional affiliates and proxies who voted!

APPA ANNOUNCES NEWEST EFP CREDENTIAL RECIPIENTS

APPA congratulates the individuals who passed the Educational Facilities Professional (EFP) exam in January and February 2009 and received the EFP credential, designating them as a professional proficient in the primary areas of educational facilities management. The credential is earned through a comprehensive examination testing knowledge of four core areas key to the profession: general administration; operations and maintenance; energy and utilities; and planning, design, and construction. Those receiving the EFP designation are:

JANUARY

Michael Ham, San Jose State University
Lawrence Hess, Lakeland College
Jim Hines, University of Nebraska, Lincoln
Edward Keller, University of North Carolina,
Greensboro
Paul Lozo, University of Richmond
Viron Lynch, Weber State University
Ryan McKinney, Michigan State University
Kyle Mills, Kutztown University
Luis Rivas, Texas Tech University Health
Science Center
Shawna Rowley, Weber State University
John Skyberg, San Jose State University
Bobbie Tassinari, University of North Texas
Jeffrey Tillett, Milton Hershey School
Freddy Ulloa, Barry University
Nancy Webb, University of South Florida,
Polytechnic
Juan Zamora, St. Thomas University
Michael Zwanziger, University of North Iowa

FEBRUARY

Lisa Adair, University of Colorado
Daniel Anderson, Southern College of Optometry
Fredrick Best, University of New Mexico
Gregory Brinkerhoff, Brigham Young
University (student)
Homer Bruner, Texas A&M University
Vincent Chavez, University of New Mexico
Cameron Christensen, California State University
East Bay
Daniel Costello, Western Connecticut State
University

Ronald Dulceak, College of DuPage
Hollis Dyer, Texas Christian University
Dennis Ferguson, Baylor University
Robert Garman, University of New Mexico
J.G. Gomez, Alamo Community College District
Robert Henry, Texas A&M University
Abraham Hernandez, University of Texas Brownsville
Charles Hightower, Texas A&M University
Billy Hromas, University of New Mexico
Douglas Hurd, University of Virginia
Stanley Izard, Texas A&M University
James Jinks, University of Texas San Antonio
Bryan Jolley, Brigham Young University (student)
Paul Manson, Michigan State University
Joseph Martin, University of Texas San Antonio
Mark Manzutto, University of New Mexico
Evelyn Munoz, California State University East Bay
Holly Mussatti, American University
David Payne, Texas A&M University
Anthony Polka, Arizona State University
Jesus Reza, University of Texas Austin
Shelton Riley, Texas Christian University
Joe Rubio, University of Texas San Antonio
Dean Ruck, University of Houston
David Schultz, California State University East Bay
Chris Snow, Oklahoma City Community College
Joel Straquadine, University of New Mexico
Karen Sullivan, Purdue University Calumet
Michael Tadevich, California State University
East Bay
Jennifer Toor, California State University East Bay
Leslie Williams, Texas A&M University
Ric Williams, California State University East Bay
Vince Zapata, Alamo Community College District

The EFP credential is a way to validate the unique knowledge and competence required of an accomplished professional in the educational facilities field. For eligibility requirements, dates, and to apply for the preparatory course or exam, please visit www.certification.appa.org.

LAST CHANCE TO REGISTER FOR APPA 2009!

It's not too late to register for the APPA 2009 conference, July 8-10, 2009 in Vancouver, Canada.

The conference will focus on:

- Influence/Leadership/Communication
- Disciplines/Accountability/Expectations
- Sustainability
- Total Cost of Ownership

Register today for APPA 2009 at <http://appa.org/Training/appa2009/index.cfm>.

**NOTICE TO APPA BUSINESS PARTNERS:
2009 EXHIBIT HALL OPEN FOR BOOTH SALES**

All APPA Business Partners are invited to join us at APPA 2009: Focusing on the Critical Few in beautiful Vancouver, British Columbia July 8-10, 2009. With Stephen R. Covey and many more world-class presenters scheduled, APPA's annual conference promises to be a tremendous professional development experience for campus facilities professionals. For information

on exhibiting at APPA 2009, contact Maxine Mauldin-Chappell at maxine@appa.org or 703-684-1446 ext. 245, or visit www.appa2009.org. We look forward to seeing you in Vancouver.

**RESUME BANK**

Whether you are an employer looking for a Director of Facilities or a Supervisor for Custodial Services, or a facilities professional looking for a new position, the Job Express Resume Bank can help. APPA's Resume Bank allows job seekers to post their resume online, and lets employers search resumes for the right prospective candidate.

For more information, please contact Cotrenia Aytch at cotrenia@appa.org or visit <http://appa.org/JobExpress/JobResumesHome.cfm>.

**PROFESSIONAL DEVELOPMENT****EFP EXAM**

The Educational Facilities Professional (EFP) credential is the industry standard, sought after by employers in educational facilities. The EFP recognizes your knowledge and competence, showing decision-makers that you're an accomplished professional possessing the fundamental knowledge that you need for a successful career.

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July 11, 2009 - Vancouver, Canada • September 2009 - Hilton Head, SC

CEFP EXAM

The Certified Educational Facilities Professional (CEFP) designation denotes the highest level of educational facilities mastery, elevating the credibility of the individual who holds the certification and the institution the certified professional represents. CEFP Study Guide now available!

CEFP Exam:

July 11, 2009 - Vancouver, BC, Canada • September 2009 - Hilton Head, SC

For additional information on either program please visit <http://www.certification.appa.org/> or contact Derrick Johnson.

APPA EVENTS – 2009

Jun 4-5 Wyoming Chapter Meeting Casper, WY

Jul 7-11 Supervisor's TOOLKIT, Vancouver, BC, Canada

Jul 8-10 APPA 2009: Focusing on the Critical Few Vancouver, BC, Canada

Jul 11 EFP Prep Course, EFP Examination, and CEFP Examination Vancouver, BC, Canada

Jul 12 EFP Examination Vancouver, BC, Canada

Sep 6-10 Institute for Facilities Management Hilton Head, SC

Sep 6-10 Supervisor's Toolkit Hilton Head, SC

Sep 11 EFP Prep Course, EFP Examination, and CEFP Examination Hilton Head, SC

Sep 12 EFP Examination Hilton Head, SC

Sep 20-23 RMA Annual Meeting Tucson, AZ

Sep 26-30 CAPPA Annual Meeting Grand Forks, ND

Sep 27-30 MAPPA Annual Meeting Iowa City, IA

OTHER EVENTS – 2009

Jul 11-15 CSHEMA Annual Meeting, New Orleans, LA

Jul 18-22 SCUP Annual Meeting, Portland, OR

Sep 12-16 URMIA's Risk Management Conference Nashville, TN

Sep 20-23 Greening of the Campus Conference, Indianapolis, IN

For more information or to submit your organization's event, visit www.appa.org/applications/calendar/events.cfm.

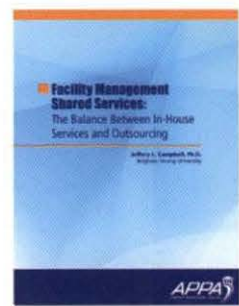
NEW APPA PUBLICATION!

Facility Management Shared Services: The Balance Between In-House Services and Outsourcing by Jeffery L. Campbell, Ph.D., Brigham Young University

This new APPA publication, available as an e-book, focuses on the symbiotic and collaborative relationships and partnerships of working with outsourced contracted services. Includes

interviews with facilities professionals using both in-house services and outsourcing, research findings, recommendations, and questionnaires to use in gauging the needs of your own facility.

Available at the APPA Bookstore, www.appa.org/bookstore.





Seize the Day!

By E. Lander Medlin

As President Obama stated in his inaugural address: “The challenges are real, many, and serious . . . we are in it for the long-haul and it is *not* for the faint-hearted. It will take risk-takers, doers, and makers of things. We must be productive and inventive, imaginative, and courageous.” This is a chaotic time flush with economic uncertainty. Yet, it is in this chaotic, tumultuous economic environment that we live in and must do our best work.

I am reminded of the Chinese symbols for the word “chaos.” The written symbols actually consist of two sets of characters connoting two words that mean when literally translated: Risk **and** Opportunity! Certainly there are innumerable risks we must be aware of as we traverse this uncharted territory. However, the greatest risk is not recognizing the potential opportunities. Although we should proceed with due caution to avoid as many of these risks as possible, it is equally important to recognize the opportunities as they emerge.

AREAS OF EXPERTISE

For example, the U.S. federal stimulus package focuses on restoring science to its rightful place in society; dealing with rising healthcare costs; moving to energy independence; ensuring a sustainable planet; and transforming our schools and colleges. Facilities professionals possess important knowledge and expertise in at least four of these five targeted areas. Many hard choices will need to be made. We have the capacity to meet them head on. We cannot afford indifference. The work has changed, and so must we.

Our attitude toward these problems and our approach to problems in general cannot be underestimated. A positive attitude and positive perspective makes a difference in how you approach issues and problems,

your capacity to face such challenges, and your effectiveness in building relationships that count over time. Your attitude serves as a powerful foundation for determining the choices you make and the actions you take. But attitude is *not* everything. You must couple your experience and expertise with competency, determination, and the capacity to take the actions necessary to solve problems efficiently and effectively. Your value and worth as a leader will be realized in the quality of your recommendations and the substance of your daily actions.

A POSITIVE ATTITUDE AND POSITIVE PERSPECTIVE MAKES A DIFFERENCE IN HOW YOU APPROACH ISSUES AND PROBLEMS, YOUR CAPACITY TO FACE SUCH CHALLENGES, AND YOUR EFFECTIVENESS IN BUILDING RELATIONSHIPS THAT COUNT OVER TIME.

LOVE YOUR PROBLEMS

In fact, we must learn to love problems. Employers want staff who can solve problems, not create them. Problems actually define us. They ultimately shape us. They make us invaluable. Ultimately, it is not about the problems, it is about the solutions, and that is where our attitude can make such a huge difference.

Take the ancient Chinese Emperor who asked his wife to determine what was causing damage to their mulberry trees. Upon further inspection, she found that the brown spots on the leaves were caused by a moth. The moth laid its eggs, which produced a caterpillar that spun a cocoon, which, in turn, caused damage to the tree. Being of inquisitive mind, she dropped the cocoon in water and lo and behold there appeared a tiny thread that when unraveled stretched a half a mile long. Silk was discovered and became more valuable than gold at the time!

Therefore, what could have been considered just another mundane, innocuous problem became an incredible opportunity for a new and valuable product for centuries to come.

Our problems may not seem to have quite the same potential for import, but you never know. Many an industry has been spawned by the spark of a new and innovative idea generated from the solution to a problem that was inventive, creative, and imaginative.

In Steve Thweatt's recent article titled “The Price of Paralysis” [January/February 2009 *Facilities Manager*], Steve discussed the price we pay for indecisiveness. He emphasized that inaction is really action. The fear of making a wrong decision can actually bring

more disastrous results, far-reaching and unintended consequences, and expose our leadership weaknesses. The greater weakness lies in not being part of the solution or providing your important perspective.

Through the pressure of adversity, real leaders will emerge. A positive attitude and a healthy perspective coupled with information about the current reality, will allow educational facilities professionals to assess alternatives, present the best recommendations, and make good decisions on behalf of their organizations. It is these defining moments that build one's character and provide the confidence and tenacity to withstand the resultant pressure.

FUTURE GROWTH

When asked about the role of chance in scientific research and discovery, Louis Pasteur said, “Chance favors the prepared mind.” We, too, need to be prepared since

the potential for future growth resides in education, healthcare, renewable energy, and the governmental industry sectors. Certainly increases in the Pell Grant will allow greater access for students to enter our colleges and universities. We will ultimately benefit from this enrollment growth. And, although the final version of the stimulus package did not include a separate pot of monies for facilities infrastructure projects, we must still be prepared with "shovel-ready" projects. These types of projects are allowable in the State's Fiscal Stabilization Fund and within the various federal research agencies' allocations (visit our website www.appa.org/recovery for more details).

This situation is just as real for APPA where our overall strategy is to streamline services and reinvent our delivery system. We must do so to ensure we continue to meet your needs at your time and place of choice. Organizationally we are positioned well to seize future opportunities. Why can I say this? After exhaustive surveys of the membership in late 2005, APPA embarked on an aggressive strategic business plan to ensure a targeted and focused investment to support the future needs of the educational facilities profession. In just three short years we have completed much of our work on the 7 Key Strategies by accomplishing:

- **The BRAND Identity** revamped our look and feel and approach.
- **The Website/ Database** was successfully re-launched.
- **The "On-line" Membership Directory** was delivered this past fall, which cut costs and reduced our carbon footprint.
- **The Research** effort has been especially fruitful given our latest Thought Leaders Series monograph entitled *The Challenges to Campus Facilities of Demographic Changes and Accountability* sponsored by Jacobs, and the *Practical Guide to Reducing the Campus Carbon Footprint*, which was graciously sponsored by Affiliated Engineers, Inc. (AEI).
- **The Collaborations** have focused on various projects with AGB (Association of Governing Boards); NACUBO (National Association of College & University Business Officers); ASHRAE (American

Society of Heating, Refrigeration, and Air-Conditioning Engineers); CSHEMA (Campus Safety Health and Environmental Managers Association); and AASHE (Association for the Advancement of Sustainability in Higher Education).

- **The Virtual Connections** are engaging young facilities professionals through our new appearance on Facebook, LinkedIn, and Wikipedia.

- **The Webinars & Quality Educational Programming** are having a significant impact on facilities managers growth and development across the entire professional development career continuum from supervisor to senior facility officer.
- **The Certifications** have now been completely developed with our *EFP (Educational Facilities Professional)* for the younger, mid-career professional,

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and the *CEFP (Certified Educational Facilities Professional)* for the more experienced facilities professional. They are now being delivered across the country in dozens of drive-in locations which we call "Certification Exam Day."

The playing field has changed dramatically . . . another growth opportunity for all of us. The challenges of:

- A weakened economy overall
- Shrinking private sector
- Facilities department budget cuts/slashed
- Massive travel restrictions
- State of fear & uncertainty, creating paralysis
- Perceptions of value

Will require a perspective of:

- Renewed energy & commitment for the work
- Embrace the situation as an opportunity
- Recognize you have an impact
- People need our services more than ever
- Unprecedented opportunity to expand/reinvent ourselves

- Must harness the winds of change by making course corrections

As a fine Navy admiral once said, "We may not be able to change the wind, but we can always adjust the sails." To address these challenges and apply the required perspective, APPA is taking the following actions:

- **VIRTUAL, VIRTUAL, VIRTUAL!** – Utilizing online delivery methods such as webinars, teleseminars, and podcasts to a much greater degree.
- **LOCAL, LOCAL, LOCAL!** – Institutional, regional, and local delivery of the Leadership Academy tracks I and III; selected Institute courses; and Supervisor's Toolkit.
- **SPONSORS, SPONSORS, SPONSORS!** – "Bundle" opportunities to increase exposure and visibility by our members for our business partners' products and services and build these relationships personally and for the long term.

Our accomplishments to date and the actions we are now pursuing will put

us on the critical path to maintain our competitive edge. We recognize the magnitude of the weakened economy. Yet we believe, organizationally, that we are well-positioned to seize future opportunities and reinvent APPA's delivery system. Accomplishment of the 7 Key Strategies now places APPA in a strong strategic position capable of seizing different delivery opportunities and positioned to collaborate with the best of the best. We plan to thrive, not just survive!

In the movie *Dead Poets' Society*, Robin Williams was speaking to the boys of that small preparatory school as they looked at the wall of pictures of their forbear's and he emphasized the perspective they should embrace immediately and well into the future stating, "Carpe Diem - Seize the Day, boys; Seize the Day!" Indeed, we must all Seize the Day! ☺

Lander Medlin is APPA's executive vice president; she can be reached at lander@appa.org.



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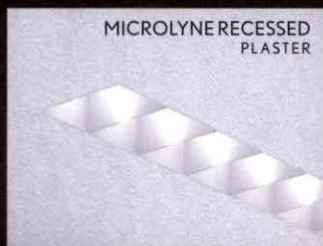
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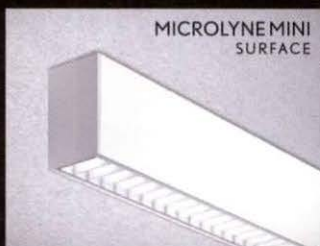
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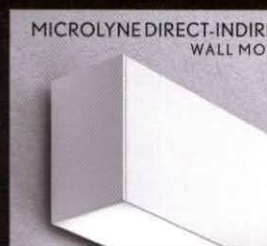
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Identify the Need

By Dan Whitezell

When asked to write this column and direct it primarily to Business Partners, finding an appropriate starting point required some thought. We have all been “members” of many things in our lives and careers, some by choice and others by happenstance. The level of involvement probably varied greatly due to interest in the group or organization, and what you were able to take away from it in personal satisfaction or perhaps even personal gain. Clichés like “you only get out what you put in” come to mind, but let’s face it, they do get a bit stale and no one really likes to be reminded. However, an organization is the sum total of its members, and it takes them all to make it work.

BECOMING VISIBLE AND INCLUDED

Looking back to the early 1980’s, a first experience with APPA consisted of paying a membership fee, signing up for a booth, and showing up at a conference. I stood around like it was a trade show and got almost nothing out of it. The company was not fully committed to the higher-ed market, and I was not at the right level to impact the thinking up in the carpet corridor (a rather short-lived experience, where I could refer back to that old cliché.)

Fast forward to the mid-nineties, and now finding myself at a somewhat different level, it was time to make a commitment and really become a member. At first that was simply visibility with a controlled approach to the market, following participation at the chapter, regional, and international levels. Gradually, relationships were developed, recognition improved, and business

objectives started to be achieved. This is not an overnight type of thing and if those objectives are to be achieved, one has to want to be a member of APPA, and be one consistently. You can find the word “inclusion” in the Webster’s definition of member, and that’s something to keep in mind.

MONTHLY CONFERENCE CALLS, E-MAILS, SITE VISITS, PHONE CALLS, AND DAILY EXECUTION OF TASKS ARE NECESSARY TO CONFIRM THE VENUE DETAILS, ACQUIRE SPEAKER COMMITMENTS, PLAN THE PROGRAM, AND MAKE SURE ALL OF THE AMENITIES ARE IN PLACE FOR THE ATTENDEES, EXHIBITORS, AND SPONSORS.

Being a member, being visible, being included, and being involved led to my appointment as an at-large member to the APPA Board of Directors. My term started about a year and a half ago when the economy was not too bad, and it’s coming to a close this summer when, well, you don’t need to hear it from me. Through this change in external influences, APPA has stayed the course, maintained the commitments to its core beliefs and strategies as directed by the institutional officers and representatives on the Board, and continued to deliver top shelf programs

to support its members. Having seen this from the inside, believe me when I say it has been a challenge, and one the dedicated APPA staff and officers have stepped up to meet.

Serving on the Board led to committee appointments for the purpose of attempting to speak for the Business Partners and to look out for their best interests. One of those was the Planning Committee for APPA 2009, the international conference being held in Vancouver, British Columbia July 8-10.

ECONOMIC CLOUDS

Economic conditions may cast a cloud over this event, and that is unfortunate. It is necessary for members, both Institutional and Business Partner, to understand that this type of event takes a great deal of effort to pull off. Monthly conference calls, e-mails, site visits, phone calls, and daily execution of tasks are necessary to confirm the venue details, acquire speaker commitments, plan the program, and make sure all of the amenities are in place for the attendees, exhibitors, and sponsors. And, like it or not, all of these things cost money.

As one who participates in a diverse set of trade shows and conferences annually, it’s no secret that booth costs and sponsorships help to defray costs beyond those directly involved with the exhibit hall. If it were not that way, the registration fees for the attendees would be so high that no one would come. If no one could afford to come there would be no conference, and without the conference and what it offers for education and networking, where might APPA be?

MARKETING, MARKETING, MARKETING

While it is far from my place to presume how anyone should overcome internal budget issues, allow me to use one term that the APPA Board has heard me use repeatedly: marketing. That is a really broad term and means different things to many people, but it has some fundamentals that can be applied. When looking at APPA 2009 in Vancouver and making a choice on whether to attend, exhibit, or sponsor, break it down into a simple features-and-benefits analysis.

If approval is required in that carpet corridor where I had no success almost three decades ago, list out the obvious features of the conference that can be found on APPA's website, and attach a personal, institutional, or business benefit to each feature. It's tough to argue with a good features-and-benefits exercise, and while it's no guarantee, it

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is a valid approach. Try not to "sell" the conference, but rather "market" it. Or perhaps better said, identify the need and then fill it by attending, exhibiting, or sponsoring. Like many of you, this year's budget is under constant scrutiny. But, maintaining a presence with APPA and continuing to take advantage of the opportunities available makes it a line item to be protected.

Those APPA membership opportunities are exceeded only by its commitment to continue to provide them. Those on the Board will tell you that

I don't get all wrapped up in the emotions of the moment, but let's all step up and make membership matter by making APPA 2009 and beyond everything it can and will be. Good times and those not so good. ☺

Dan Whitezell is vice president, marketing and sales at Spirotherm, Inc., Glendale Heights, IL, and an At-Large Member of the APPA Board of Directors. He can be reached at dpw2@spirotherm.com.

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The Enforcement of ASHRAE Standard 90.1

By David Handwork, P.E.

The most influential unenforced code of our time is ASHRAE 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. This statement comes with boldness in light of the current federal policies being shaped and delivered via the current economic stimulus act. Facilities managers need to be aware that the popular benefits of 90.1 could inadvertently expand the reach and impact of this code far beyond the basis of design and construction of building energy efficiency.

THE ROOTS OF ASHRAE 90.1

So how did 90.1 become this influential national policy? The roots begin with the energy crisis of the 1970s. Standard 90.1 was first introduced by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers in 1975 as a building engineering design response to national energy conservation. The early success of 90.1 became evident as it stood nearly alone as the benchmark design and construction standard regarding energy efficiency of commercial buildings.

Through the 1980s and 1990s, 90.1's prominence emerged as other influential building code organizations, such as NFPA and ICC, either referenced or fully adopted 90.1 as their energy conservation standard. But nationally, issues emerged using a document crafted as best design practices for the purpose as an enforceable state and local energy code. These issues became highly visible with 90.1's reference in the Federal Energy Policy Act (EPACT) of 1992. The format subsequently evolved in the 90.1-1999 version to reflect code

friendly language, and concurrently received ANSI (American National Standards Institute) approval and IESNA (Illumination Engineering Society of North America) co-sponsorship. This historic milestone facilitated states and municipalities to fully adopt 90.1 as their energy code for commercial building construction. This milestone coupled with 90.1 case studies documenting building energy reduction enabled acceptance by facilities management organizations, and obvious endorsement by the U.S. Department of Energy.

Further success of 90.1 was achieved when it was fully integrated into the 2004 revision of EPACT. This EPACT revision invoked a federal mandate for state energy codes to meet or exceed 90.1-2001. Alas, the ASHRAE document originally crafted as best design practices matured to the nationally recognized energy conservation building code.

ASHRAE deserves the highest of recognition for the positive impact 90.1 has realized. Facilities managers appreciate that the value added aspects of their buildings constructed under the standard, even before 90.1 became code. Building envelopes have better insulation values and are more airtight to unwanted infiltration. Window construction provides lower solar heat gain during the cooling season, but allows and encourages the building designer to provide natural sunlight in lieu of, or supplement to, electric lighting.

Interior and exterior lighting was finally defined as to provide adequate lumens for occupants while minimizing energy use and reducing the total number of maintained fixtures. Lighting controls were

finally part of building design, not an energy efficiency amenity subject to the value engineering process when the budget was exceeded. The standard provided minimum energy efficiency requirements of major HVAC equipment including boilers, chillers, cooling towers, and other rotating equipment. The HVAC system design provides for variable air volume (VAV) with individual occupant control. Energy management control strategies were defined for designers and building managers. All of these features are undoubtedly desired by building owners and occupants.

However, before the existence of 90.1, the burden of ensuring these features as part of the basis of design rested completely upon the building owner. As 90.1 became code, the burden shifted as the sole responsibility of the design professionals and code enforcement authority. Prior to this paradigm shift, energy efficient buildings existed only as a result fiscally responsible building owners and at the influence of the design professional. Pre-90.1, it could be questioned if a building was designed and constructed with energy efficiency in mind. Today, the only questions are to what extent energy efficiency best practices are incorporated in building design, and how effective the code was enforced during design and construction.

ENFORCING THE CODE

As a direct question to education facilities managers, how effective is 90.1 being enforced as code on your campus? Anecdotally, responses to this question have ranged from "Enforcement does not exist" to "The state/local code official is highly engaged on 90.1 enforcement." The main premise of this article is that the former response is more common than the latter. This premise is primarily based upon this author's discussions with facilities managers and engineers at state, regional, and international APPA meetings over the past eight years.

However, a January 2007 report sponsored by the Lighting Controls Association presented survey results from building owners and design professionals that validate this presupposition. For example, 67 percent of the respondents indicated the documentation or intent to comply with 90.1 is required in order to obtain a building permit. However, 83 percent of these responses indicated inadequate or no code enforcement/inspections occur relating to 90.1. This can be interpreted that 90.1 is generally not a code enforcement priority.

Subjectively, limited staffing and budget resources for code enforcement agencies places priority on building life safety issues; structural, emergency egress, fire alarm and fire protection, and ventilation. If resources are available post adequate enforcement of life safety, it can be argued the order of enforcement priority is likely local codes (parking densities, setbacks, utility right away) and ADA aspects, then 90.1. There-

fore, 90.1 can be generally reasoned as an unenforced code for most locales.

Lack of code enforcement does not correlate to ineffectiveness of 90.1. Due to the positive outcomes of the 90.1 code, building owners and design professionals commonly practice self regulation. This is especially true on college and university campuses subject only to a state building authority for inspections and enforcement, or those empowered by state legislation for self inspection and enforcement. There have not been any metrics of the success of self regulation, but the economics provide owners heightened incentive for driving enforcement. Depending upon owner resources, this enforcement is via owner employees, directives to the design professionals, or contracted inspection official/commissioning agent.

A new age of 90.1 code enforcement may be upon the building industry. The American Recovery and Reinvestment Act of 2009 references 90.1-2007 under

Title IV Section 410 as a proviso for grant funding to states. Eligibility for the additional grant funding partially requires gubernatorial confirmation the state energy codes for commercial buildings meet or exceed 90.1-2007, the energy codes for residential buildings meet or exceed the International Energy Conservation Code (which references 90.1), and to provide "a plan for the jurisdiction achieving compliance with the building energy code or codes within 8 years of the date of enactment of this Act in at least 90 percent of new and renovated residential and commercial building space. Such plan shall include active training and enforcement programs and measurement of the rate of compliance each year." With \$16.8 billion at stake, there exists a significant incentive for states to enable and sustain a vigorous compliance and enforcement measure of the energy codes. Even for self-regulated entities, this will be a dramatic elevation of prior-

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ity when inspecting building design and construction for compliance.

DELIVERING ENERGY EFFICIENT BUILDINGS

Elevated compliance rates for 90.1 will be an overall improvement for delivery of energy efficient buildings. There is potentially a secondary consequence that could make continual compliance and

enforcement an operational burden. In December of 2008, ASHRAE Standard 90.1 committee submitted for public comment and review Addendum 'aq'. The main purpose of 'aq' is revision of 90.1 purpose and scope statement from "design and construction" to "design, construction, operation and maintenance." The intent of this proposed revision is assurance the designed efficiency

of the building remains for the full life cycle. On the surface, this intent is noble and acceptable to facilities managers.

However, the APPA Code Advocacy Task Force (CATF) quickly acknowledged that the inclusion of O&M scope of existing code will create significant resource challenges. In light of the proviso in the Recovery and Reinvestment Act, these challenges could be an eminent reality. The CATF provided a statement to ASHRAE endorsing the purpose and scope as currently stated, objecting to the proposed addendum. Furthermore, recommendations and alternatives were provided as measures to ensure, acknowledge, and award facilities and institutions that practice energy conservation as fundamental part of operation and maintenance. Energy conservation is a natural function for all facilities operations as a function of sustainable initiatives, and due to the attractive financial returns. Quick financial returns are typically a result of poor design in absence of the 90.1 code.

Granted, building re-commissioning or continuous commissioning is important and needed for the life cycle of any building. Regardless, code oversight for operational energy efficiency performance is not a desired path. Better alternatives include ASHRAE Standard 105-2007 *Standard Methods of Measuring and Expressing Building Energy Performance*, ASHRAE Building Energy Labeling Program (ABEL), US-GBC LEED-EB Operation and Maintenance, and Energy Star for Buildings and Manufacturing Plants. ASHRAE will be reviewing the CATF and other comments in the coming months. A committee vote could occur as early as June 2009.

In conclusion, the focus on national energy efficiency and independence has elevated Standard 90.1 as a powerful code whose eminence may soon be regarded equal to life safety codes. ☺

David Handwork is director of engineering services at Arkansas State University and can be reached at dhandwork@astate.edu. He is a member of APPA's Code Advocacy Task Force and this is his first article for *Facilities Manager*.

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APPAParticipates in 2008 Women's Leadership Institute

By Polly Pinney

I have always been greatly appreciative and favorably impressed by the array of professional development opportunities offered via our APPA membership, both internationally and regionally. It is this rich professional development continuum that makes membership within APPA so very special and worthwhile.

As a young facilities professional (more years ago than I care to admit), I was most grateful for the leg-up on my future that these programs provided.

On December 7-10, 2008, I was privileged to join a delegation of APPA members for the Women's Leadership Institute in Amelia Island, Florida. This new offering was designed in collaboration by seven of our CHEMA associations and is targeted for women seeking to become senior leaders in higher education administration.

Candidates from APPA were nominated and supported by their institutional leadership based on their potential and status as "up and coming" facilities professionals within the APPA member community. APPA members **Christine Douglas**, University of Iowa; **Tanya Hughes-Joiner**, University of Florida; **Susie Reid**, University of Richmond; and **Shawna Rowley**, Weber State University, joined **Suzanne Healy**, APPA director of professional development and me for three-and-one-half days of programming.

Subject matter included Crucial Conversations, Influence/Power, Change Management, Developing Others, Gender/Cross Cultural Communication, and Career Development, and was keynoted by Sara Leeschever, co-author of *Women Don't Ask*, and anchored by Frances Lucas, president of Millsap College. In between day and evening sessions the schedule was

interspersed with time to network, talk a bit with corporate supporters such as American Campus Communities and Spellman Johnson and Associates, and spend some time in personal reflection on the career development portions of the subject matter.

Feedback on the Women in Leadership event

from our APPA participants and the overall evaluation of all participant comments indicates it was well received and a success by all standards.

In times such as the ones we all currently face, the development of our team members takes

on additional importance. I have recommended we continue our collaboration on this endeavor and look forward to adding this opportunity to the rich fabric of programs we offer our members. ☺

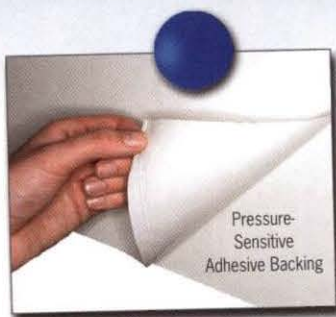
Polly Pinney is executive director for facilities management at Arizona State University in Tempe, AZ, and APPA's President-Elect. She can be reached at polly.pinney@asu.edu.

IN TIMES SUCH AS THE ONES WE ALL CURRENTLY FACING, THE DEVELOPMENT OF OUR TEAM MEMBERS TAKES ON ADDITIONAL IMPORTANCE.



From left to right: Tanya Joiner-Hughes, University of Florida; Suzanne Healy, APPA; Polly Pinney, Arizona State University; Susie Ried, University of Richmond; Christine Douglas, University of Iowa; Shawna Rowley, Weber State University.

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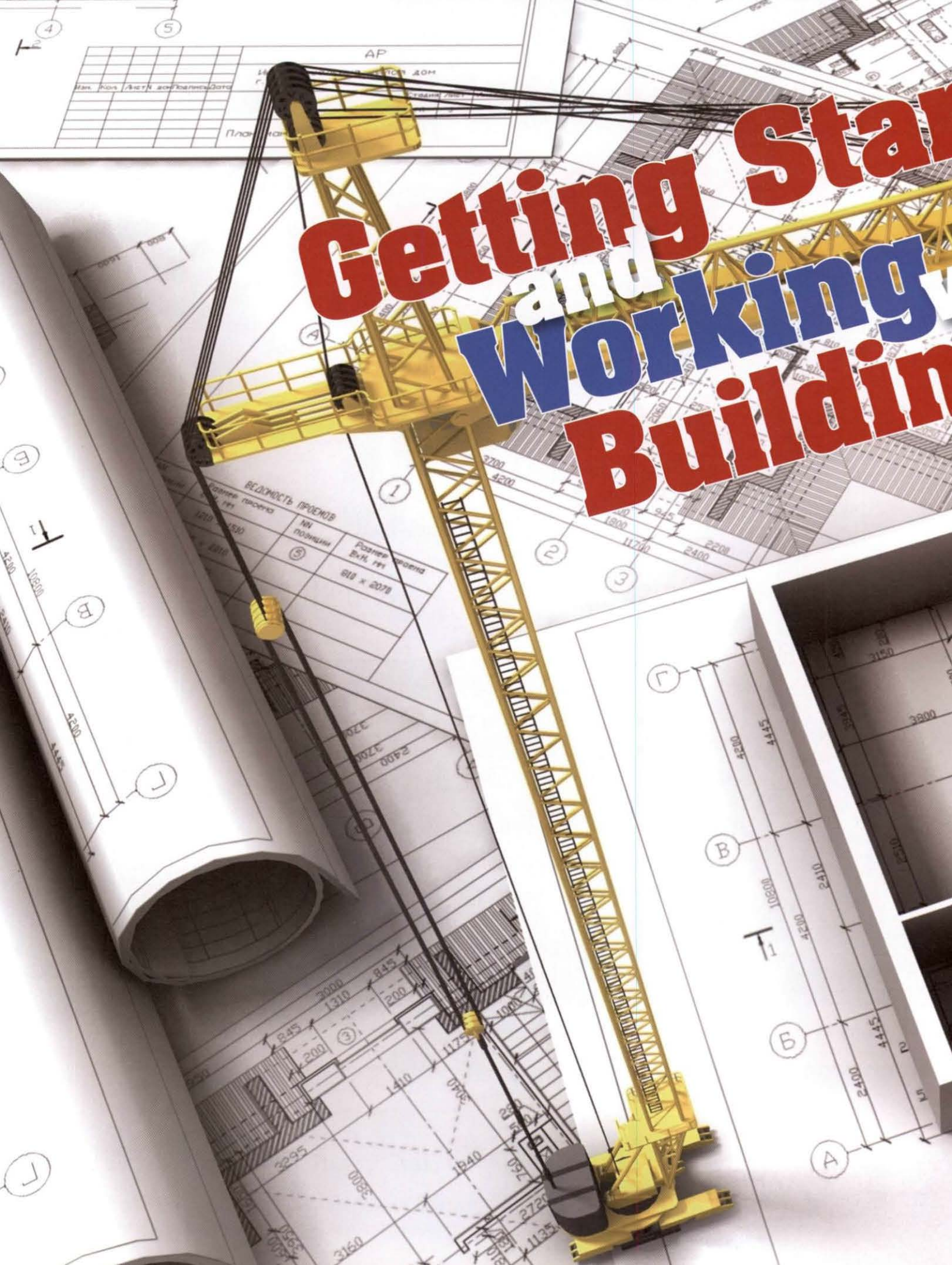
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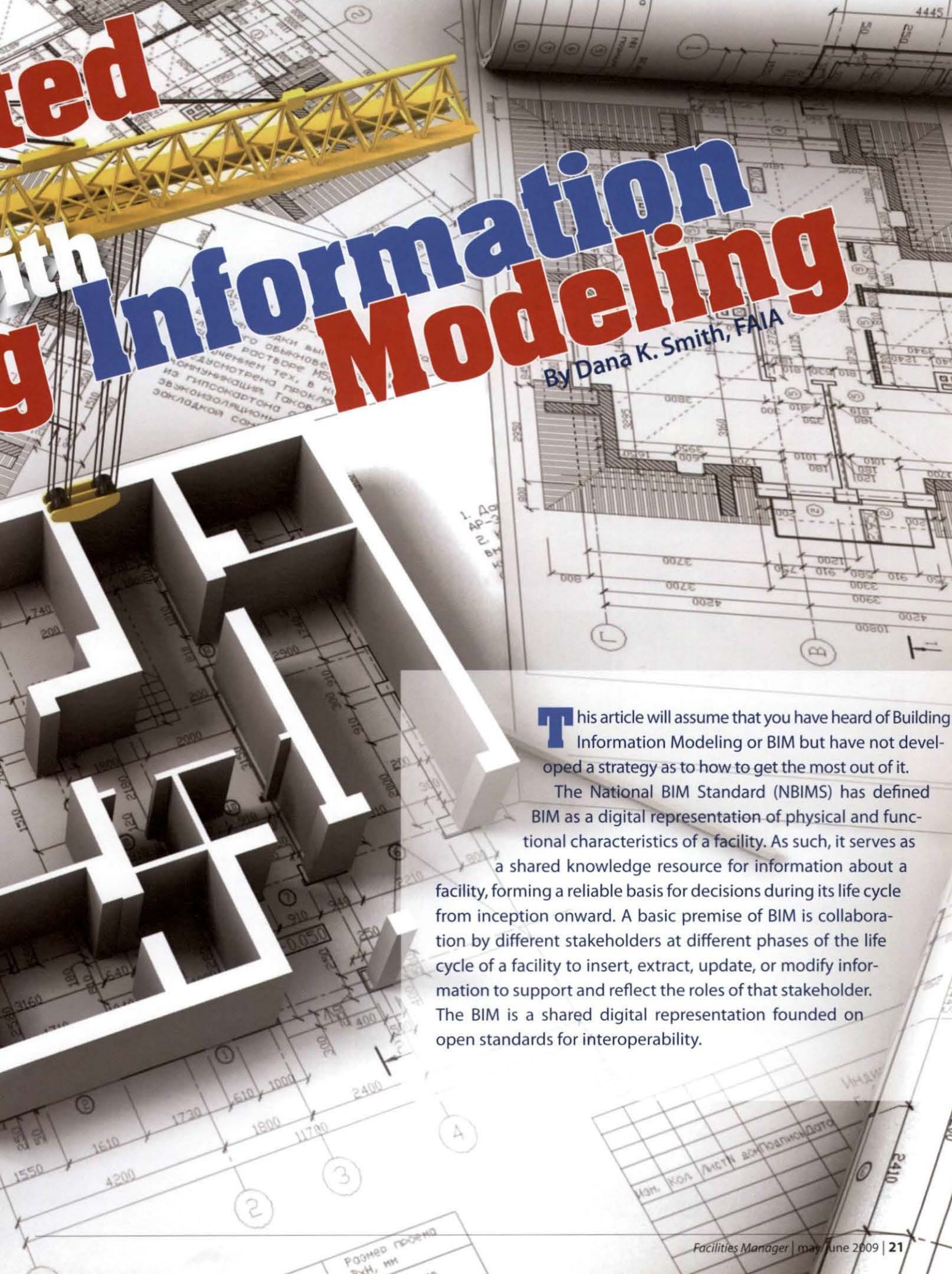
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Getting Started and Working Building





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Building Information Modeling

By Dana K. Smith, FAIA

This article will assume that you have heard of Building Information Modeling or BIM but have not developed a strategy as to how to get the most out of it.

The National BIM Standard (NBIMS) has defined BIM as a digital representation of physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its life cycle from inception onward. A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update, or modify information to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.



About NIBS

The National Institute of Building Sciences (NIBS) is an entity originally established by the U.S. Congress to bridge gaps on both the private and public sides of the industry. NIBS legislation identified that they must support the full range of stakeholders in the facilities industry to include architects, engineers, contractors, insurers, unions, manufacturers, legal, housing, vendors, owners, consumers, state & federal government, codes & standards, and testing. More information can be found at www.nibs.org.

THE "I" IN BIM

Vendors are extolling the virtues of the new 3D modeling capabilities, and many contractors have embraced the idea and are using it for clash detection, scheduling to include coordination with sub-contractors and fabricators. Some fabricators are using the information to drive their equipment for cutting steel, bending sheet metal, and other preconstruction tasks.

Some designers are using BIM for 3D visualization and simulation.

Typically, that is about where it ends for most people today. In fact, one could say that today we are really only doing Building Modeling. The Information part has been largely left out to this point, and certainly there is little passing of information from planner to designer to contractor and to facility operator. This is where information and interoperability comes in.

So what should your BIM implementation look like and how will you know you are truly doing BIM and not just building modeling? The NBIMS has a capability maturity model that you should visit to determine just where you currently stand and then determine where you want to be. Then for each category develop a strategic plan for how you plan to get there.

McGraw-Hill recently produced a document identifying the results of interviews with over 300 BIM implementers. Findings were dramatic as to the growth over just the past year in the use of BIM. What was also interesting but probably predictable was that the more people became involved and experienced the far



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better the results. It is anticipated that this will continue for quite a few years. Another interesting result was that those who measured return on investment (ROI) found that their results were higher than anticipated. As you can imagine, this is not typical as most overestimate the results and when attempting to validate find the results are often lower. The entire report can be viewed on the buildingSMART alliance website at www.buildingsmartalliance.org/news/20081203.php.

The NBIMS plays a key supporting role in ensuring long-term success for BIM. Standards are a necessary ingredient in interoperability and are at the heart of any successful implementation strategy. Therefore, you need to demand open standards based building information modeling using NBIMS as the foundation of your implementation strategy.

One option for getting started on the right foot is a tool called the Construction Operations Building Information Exchange (COBIE). This tool begins by identifying items in the design specification that will need warranty information. During construction, information about the products is collected and stored in COBIE. This information is then provided, used, and sustained by the facility manager and operator. Some are beginning to implement COBIE, but the information is still difficult to input and sustain because the business processes are not yet in place. There is one project at USC where Lucas Films has donated the funds for a facility and have mandated that BIM be used throughout the 100+ year life cycle. This approach causes the designer, contractor, and physical plant folks to work as a team to provide the best possible facility. Is this not a great goal to ensure optimizing the business process and eliminating non-value added effort? However, this type of advanced thinking needs to be far more prevalent for us to claim any level of victory.

GETTING INVOLVED

We see Building Information Modeling as being a benefit first to large portfolio owners, and we anticipate that those are the first who will get involved. Obviously, colleges and universities are some of the largest portfolio holders, along with PreK-12 and government/military. Most design and construction firms will also have this type of client in their portfolio. However, this effort is grassroots, involves everyone, and is far more successful if there is strong

About the buildingSMART alliance

The buildingSMART alliance is the North American Chapter of a larger effort called buildingSMART International. A coalition of some 30 countries who share the same belief that we need to overhaul significantly the facilities industry and that BIM and interoperability are at the center of the solution. This organization, previously known as the International Alliance for Interoperability, has been working on this problem for over ten years. The name was changed and the focus has shifted from a primarily technical solution—which developed an international standard—to a total business solution, still embodying the technical, but widening the scope to better ensure success. It was ultimately determined that the change we are seeking is cultural and far more inclusive than technical. Visit the Alliance website at www.buildingsmartalliance.org.

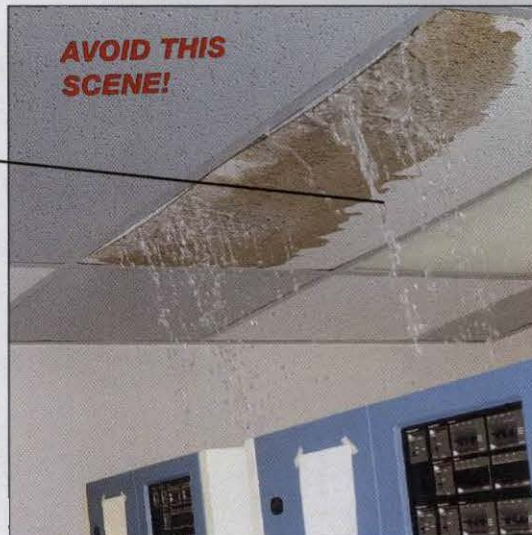
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Waste and Overlap

The Construction Industry Institute and Lean Construction estimated in 2004 that there is up to 57 percent waste, or non-value added effort, in the construction industry today. Compare that with 26 percent waste in manufacturing and you see that conservatively we have a 31 percent target of opportunity. Applying that number to a \$1.288 trillion design and construction industry, as estimated by *Engineering News Record*, and you have nearly \$400 billion in waste annually.

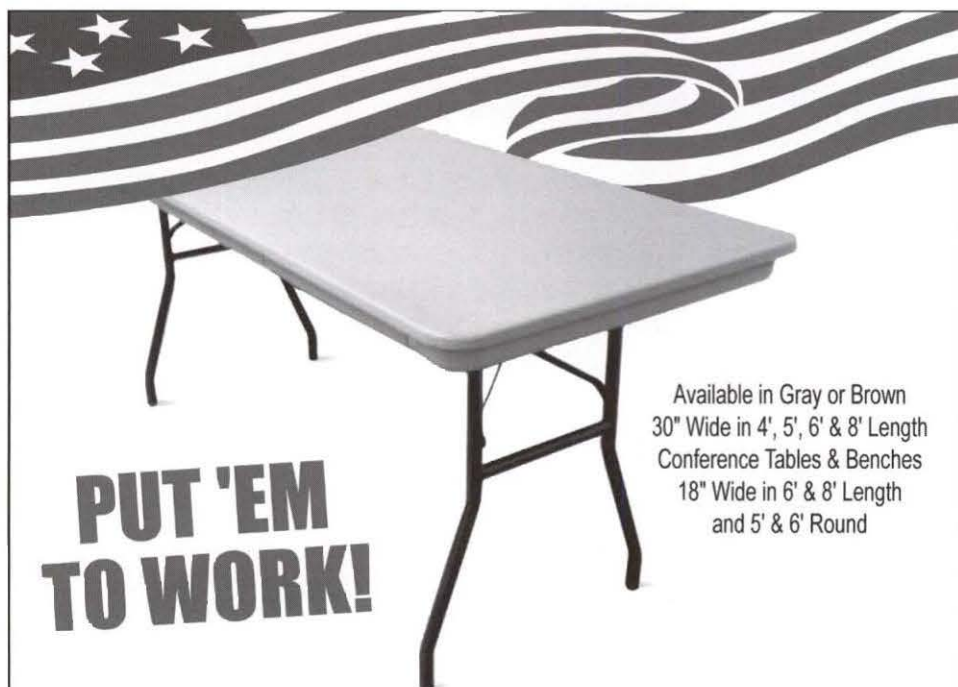
leadership from the top. BIM implementation is a corporate change and not just one person's transformation. Therefore, we are expecting many individual memberships to convert to corporate memberships in the near future as one of the metrics of our success.

As you consider developing a BIM strategy, take some solace from the fact that there have been many who came before you. You should also not expect to be masters of BIM on your first

time out. Start small and focus on what you think you can accomplish. If it is simply building modeling the first time out, then so be it. That is certainly an acceptable start as better communications with your campus and business stakeholders is a critical step for planners and designers.

Just be aware that that is only the starting point. Do not limit yourself to what any one vendor can provide either. Multiple tools can be used. COBIE, for example, has capabilities to work as an Excel spreadsheet, XML interface, as well as IFC (ISO/PAS 16739). BIM will offer you the opportunity to offer more services and potentially take back some of the responsibility (and fee) that have been shed in the past by the designer. It is your choice as to how aggressive you can ultimately become. Just do not bite off more than you can chew of that elephant. ☺

Deke Smith is an author of a Strategic Implementation Guide for BIM and is the executive director of the building SMART alliance, a council of the National Institute of Building Sciences. He is based in Washington, DC and can be reached at deke@dksic.net; this is his first article for *Facilities Manager*.



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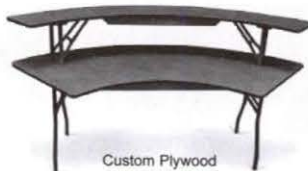
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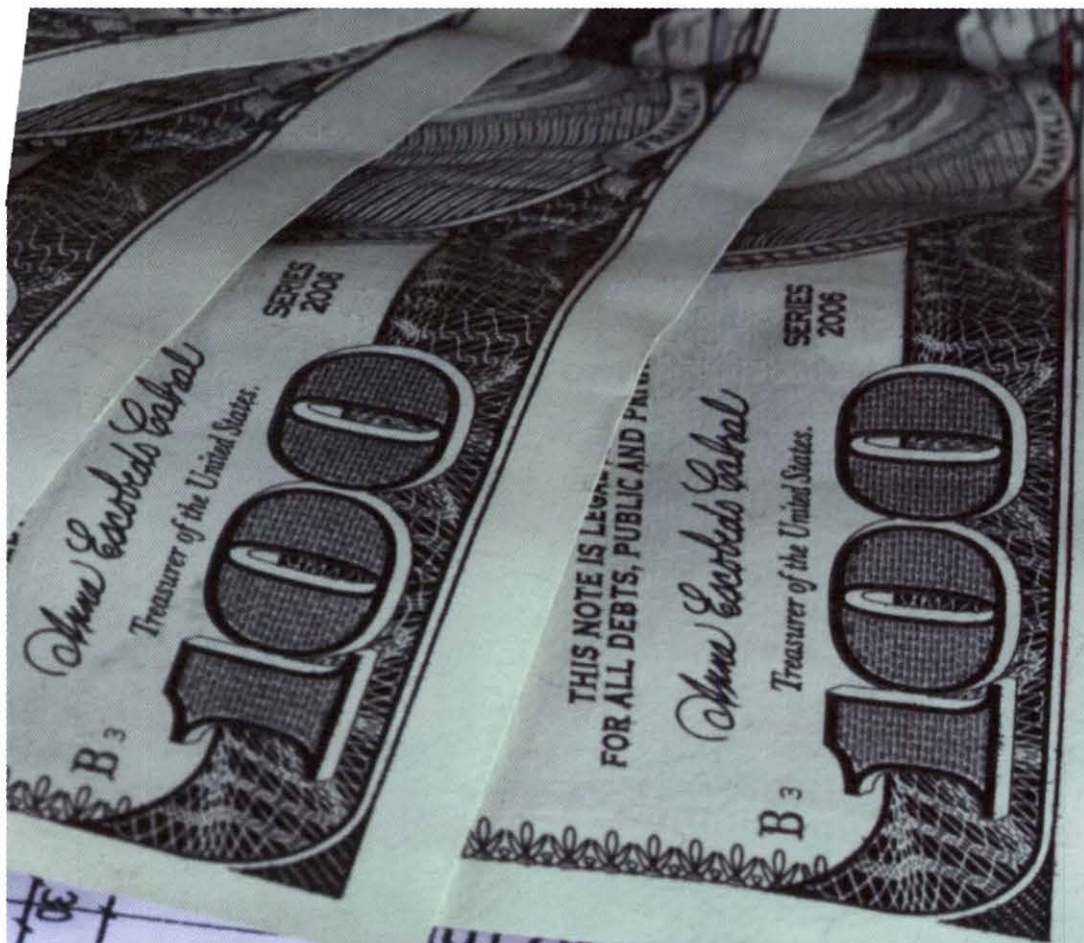
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BIM

Building Information Modeling

&

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Total Cost of Ownership

By Douglas K. Christensen, APPA Fellow

There are some words in our industry that seem to be clear and understandable to say, yet they need some help in understanding the depth of the meaning. When the term maintenance is talked about there seems to be some agreement that it does not mean building a new building. Maintenance as a term covers many areas and if not clarified could be interpreted to mean a lot of things. The king of misunderstanding is deferred maintenance. Remember in your own mind what it means to you. Does your definition align with the industry, or is there a bit of an emphasis that is unique to your culture and your interpretation?

Entering into our maintenance vocabulary are some new words. One of the words that seems simple to talk about yet is hard to find a common definition is the term *Sustainability*.

sus·tain'a·bil'i·ty *n.*

is a characteristic of a process or state that can be maintained at a certain level indefinitely

moment. What does this mean to us? In the world of facilities management it is not a new meaning but a new term. We have worried about the "indefinitely" of building and system for years. The thing that seems to be new and what we are adapting to is a process or *state* that can be maintained at a certain level. That seems to be the uniqueness of this definition. We have been working on the "process or state" for a long time. A common definition that includes words such as "maintained" and "level" has a chance on becoming something that is valued in the facilities profession and the educational community. Hopefully this will become a characteristic and mind set of those viewing our built campuses.

This is one of many definitions that are used to help us understand a new role that seems to be becoming the buzzword of the

Another new word is interoperability. Sometimes referred as a technology term the meaning of the word has a common message that seems simple to understand but difficult to apply.

There are many variations of the definition, but they all point to the concept of **inter – operate**. This is welcome news since many of us are dealing with the silo systems within our organizations. It is a common belief and is getting closer to reality that the network might be our hope for interoperability to happen in a way that it is without special effort on the part of the customer.

in·ter·op·er·a·bil·i·ty *n.*

is the ability of a system or a product to work with other systems or products without special effort on the part of the customer. Interoperability becomes a quality of increasing importance for information technology products as the concept that "The network is the computer" becomes a reality. For this reason, the term is widely used in product marketing descriptions.

Sustainability and interoperability are terms and definitions that help describe two additional terms that are impacting our profession.

- **BIM** – *Building Information Modeling* and
- **TCO** – *Total Cost of Ownership*

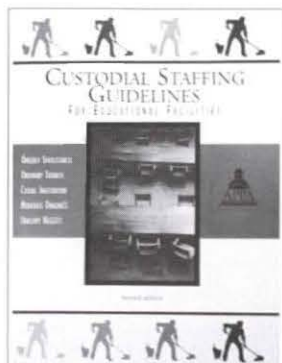
The only way these two terms are made feasible is if the practice of sustainability and interoperability is not just a planted idea in the minds of an organization, but that steps are being taken to incorporate the terms into the core way in which management sees its role and vision as facilities managers. These terms if taken on by any organization must realize this is a new vision of their mission. This vision must be understood as a "paradigm shift" and that everything that is currently being done needs to be seen through the new vision.

"WHEN A PARADIGM SHIFTS, EVERYTHING GOES BACK TO ZERO"

These definitions are not correcting steps to where they want to go. These definitions and practices are a new vision of the future and will need to be carefully defined in each organization. The culture of doing business will change. New methods and procedures of doing business will be defined. Traditional roles will be challenged. Welcome to the future.

The challenge with this change is that everyone touching facilities management will be impacted. This is not a higher education shift but

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an industry shift. We have the potential of making a better future for education and for our profession. Taking advantage of this opportunity will be the challenge.

BUILDING INFORMATION MODELING

BIM, or should I say the adopting of the BIM concepts and processes, can have a positive impact on how we do our business in the future. The BIM by definition will change the way we look and do our business.

Technology is making the BIM definition a reality. The digital representation makes the data accessible and available. The use of 3D helps to visualize what has been at times hard to read and understand from a one dimensional set of flat plans. Having a common place to store in one place all data, information, knowledge, and understanding of a building or an asset provides a reference library unique to that investment. This library will provide a wealth of reliable data and information that will assist in the life-cycle decision making for that building or its systems.

Gathering and storing operating data and comparing the building data to itself and to other similar buildings or systems will allow the organization to learn and know what kinds of systems work best in that environment. How and where to duplicate this success in managing assets will help the planning, design, and construction process and produce a better maintainable product. BIM has a wonderful future for those willing to share its vision.

As a result of the research completed by CFaR, APPA's Center for Facilities Research, in a research monograph called *Buildings...The Gifts that Keep on Taking: A Framework for Integrated Decision Making*, a full thesis was devoted to the study and practice of total cost of ownership. The industry gave insight as to what the components of TCO are and gave many success stories around each of the major cost types that define TCO. The success of the research defined a way to put all three costs together so that a framework could be developed that would bring the three separate silos types together so leadership and resource providers could make better decisions.

The research showed that many owners were getting away from managing and investing in the total investment—the three major cost silos—and instead had

BIM [Building Information Model]

is a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life cycle from inception onward.

focused primarily on just O&M costs. Focusing only on the O&M viewpoint was costing owners much more cash flow than needed to own the assets over its life cycle. The research even suggested that if owners would figure what a new building was going to cost them, for

the life cycle of a building, there were huge advantages having cash available to meet the needs of the ongoing costs of O&M and recapitalization. The largest saving would result in how much of the total cost of ownership could be in reserves at the beginning life of a building.

HOW DOES BIM RELATE TO TCO IN THE EDUCATION INDUSTRY?

The strongest relationship is that both are built on the principle of managing the life cycle of the building or asset. Both concepts define life cycle the same way. BIM is a process of gathering data and information at the beginning of the project and tracking knowledge and understanding over the life of the investment works hand in hand with TCO. TCO is a process of gathering costs over the life of the investment at each stage of the life cycle. They both divide the kinds of data and the kinds of costs the same way.

Birth & Burial: BIM is designed to gather all of the data and information needed from *all* of the life-cycle players during the development of the project. This includes everyone: the maintenance, space, business, construction, designers, planners, etc., to manage the building for its life cycle.

NOTE: The data needed for Planning, Design, and Construction in BIM (Working Design Group) is classified

the same way as the non-recurring cost group in TCO. All of the data in the working design provides all of the detail data needed to track the life-cycle costs of the building such as descriptions of all systems, components, and other assets that will be needed to use the investment. BIM provides a fully defined frontend to the building project. TCO can take advantage of this detail to track ALL of the costs that relate to the life of the building.

Operations & Maintenance: If BIM is followed as designed then all of

TOTAL COST OF OWNERSHIP

A Holistic View of Asset Management

Birth & Burial (non-recurring)

cost A	Concept to Bid
cost B	Financing
cost C	Construction/Install
cost K	Decommission/Demolition/Disposal

Operations & Maintenance (annual recurring)

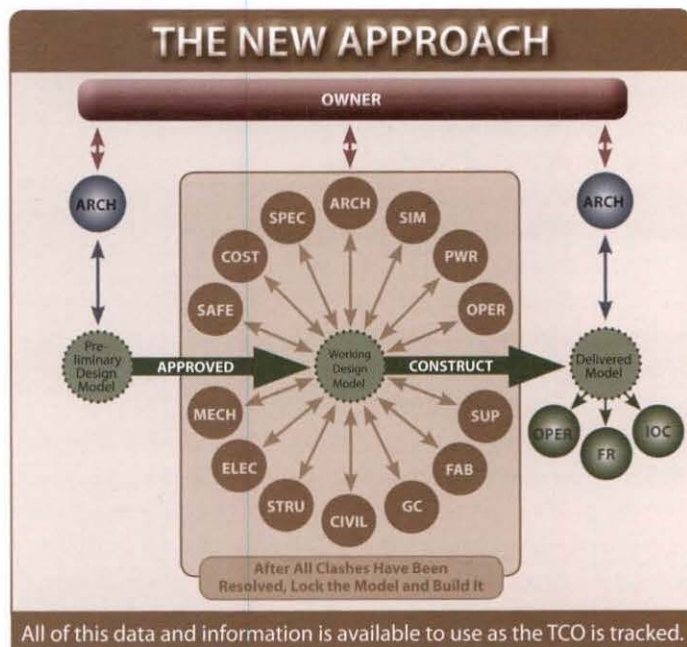
cost D	Operations
cost E	Planned Maintenance/Routine
cost F	Repairs/Breakdown
cost G	Utilities

Recapitalization (periodic recurring)

cost H	Retrofits/Improvements
cost I	Programmatic Upgrade
cost J	Replacement/Renewal

the data and information needed to maintain and operate a building is available, even before the construction begins. When a cost is needed the O&M part of the TCO aligns with the data and information already gathered. The future suggests that all of the PMs could be written and available before the project is bid. All maintenance requirements will be known in detail from the completed data and information available. The TCO would track the history of total cost to keep the building maintained and in operation. Over time this would give management a set of data to make more informed decisions.

Recapitalization: The same approach. BIM at the beginning provides all of the data and information needed to do recapitalization life-cycle projections. All of the systems and assets can be inventoried for life cycle management. Resource requirements can be projected and available at the beginning of a building. Recapitalization requires data and costs gathered by the other two TCO cost areas so an evaluation and proper decision can be made on when or if to spend more capital. This cost area allows for the continuation of the investment. The measurement of actual life-cycle costs of systems and assets allows for management to make better decisions about replacement timing of systems.



Which systems are the best for reinvestment/ recapitalization? What can be done to extend the useful life of a building? How does the original purpose of the building need adjustment to meet the current need? All of this added value from

data and costs allows management teams the proper data, information, knowledge, and understanding to make the proper decision. This allows investors to get a more favorable return on their investment.

These three different yet needed TCO costs: Birth & Burial, O&M, and recapitalization with the proper upfront planning, design, and construction process of BIM will allow every facilities manager to lead and manage asset at a better level of professionalism.

VISION

As we continue to learn and hear about new words and terms such as sustainability, interoperability, building information model, and total cost of ownership, we hope this discussion helps each of us realize that part our stewardship responsibility is to align with best practice and, even more challenging, to be willing to change when needed.

These four terms all fit our day, fit our future, and fit together. May we learn about each and apply them

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where needed. Management support and decision-making data should be collected continuously throughout the life cycle of any asset so proper decisions can be made, but data should only be created once. The data should be managed uniformly in a standard framework and the data should be securely available 24/7. As TCO is gathered over the life of the building there are patterns of cost that show up. These patterns and experience with the building allows knowledge and understanding to happen.

We need to start learning what the TCO of building is like. We need to move to the decision-making power of knowing the TCO of assets. What investment levels do we really need to have? What can we save over the life of an asset? How can we reduce the TCO of a building? What mistakes can we


Vision: Making it Happen

When it comes to the future,
There are three kinds of people:
Those who let it happen,
Those who make it happen,
And those who wonder what happened.

— John M. Richardson Jr. —

correct? What can we learn? What have we learned? How can we best provide it? We sometimes say that buildings have their own personalities. How do you capture this experience so the future buildings are sustainable, better, and reduce the overall cost of ownership and continue to match our values and vision?

The life-cycle perspective as you use BIM and TCO

together, interoperable, is one tool that will get results. This vision will inspire and change the organization for the better as we challenge ourselves and our team to move down the road and improve our business. 

Doug Christensen is director, facility solutions and compliance, at Brigham Young University, Provo, UT, and a Past APPA President. He can be reached at doug_christensen@byu.edu.

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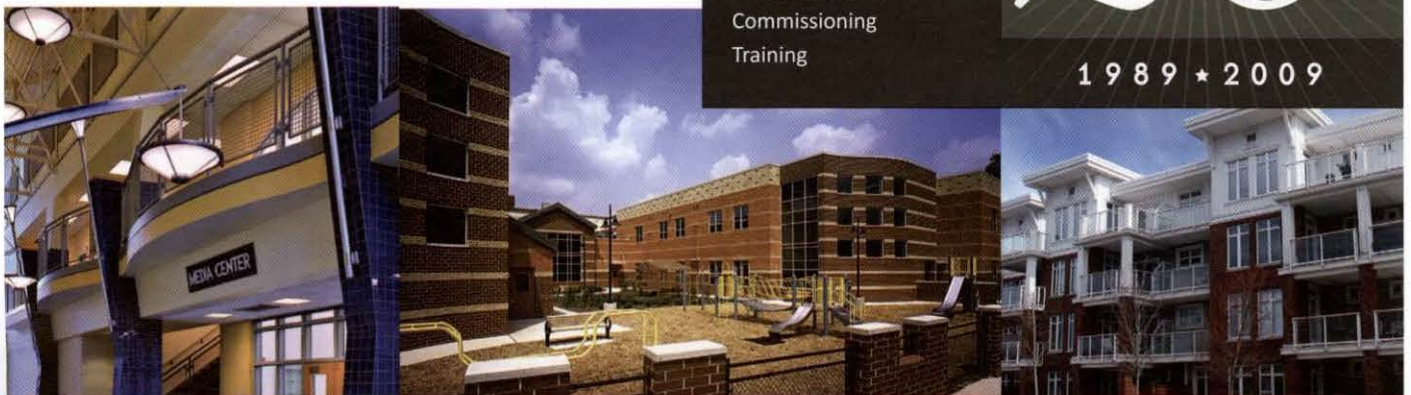
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WBDG:

A Resource for All

www.wbdg.org

By Bill Brodt and Dana K. Smith, FAIA

wbdg.org

The Whole Building Design Guide (WBDG) (www.wbdg.org) is the only Web-based portal providing government and industry practitioners with one-stop access to up-to-date information on a wide range of building-related guidance, criteria, and technology from a "whole buildings" perspective.

The resource is a product of the National Institute of Building Sciences (NIBS), a non-government, nonprofit organization that was established by Congress in 1974 but now operates on its own. The Institute was established to build a bridge between the private and public sector. The Whole Building Design Guide is a great example of the role the Institute was meant to play. Also unique is that the Institute is required by its legislation to represent practitioners in all these building industry segments: architects, engineers, contractors, insurers, unions, manufacturers, legal, housing, vendors, owners, consumers, state & federal government, codes & standards, and testing. This makes www.wbdg.org the perfect place for a whole buildings resource tool.

The WBDG is organized into three major categories:

- Design Guidance
- Project Management
- Operations & Maintenance (O&M)

At the heart of the WBDG are Resource Pages, reductive summaries on particular topics. The WBDG provides easy links to O&M resources developed by Department of Defense (DoD), Department of Energy (DoE), Environmental Protection Agency (EPA), the General Services Administration (GSA), and others including the Federal Energy Management Program's Operations and Maintenance Best Practices Guide. Although the WBDG was started by federal agencies to make it easier for contractors to access their many regulatory and guidance documents, its use within the building industry grows exponentially as more and more people find it a valued resource.

This past year over 22.5 million PDF files were downloaded by an average of 250,000 visitors each month. In October 2008 file downloads set a new record, exceeding 2 million. The educational community is currently the fastest growing user sector.

Among the top WBDG pages based upon access from Internet search engines in 2008 were:

1. Unified Facilities Criteria
2. Building Types
3. Project Planning, Management, and Delivery
4. Sustainable
5. Space Types
6. Building Envelope Design Guide
7. Facilities Operations and Maintenance
8. Specifications
9. Design Objectives
10. Precast Concrete Wall Systems
11. Parking Facilities
12. Natural Ventilation
13. CADD Library
14. Building Commissioning
15. Life-Cycle Cost Analysis (LCCA)
16. Construction Waste Management
17. Cost Estimating
18. Daylighting
19. Architectural Programming

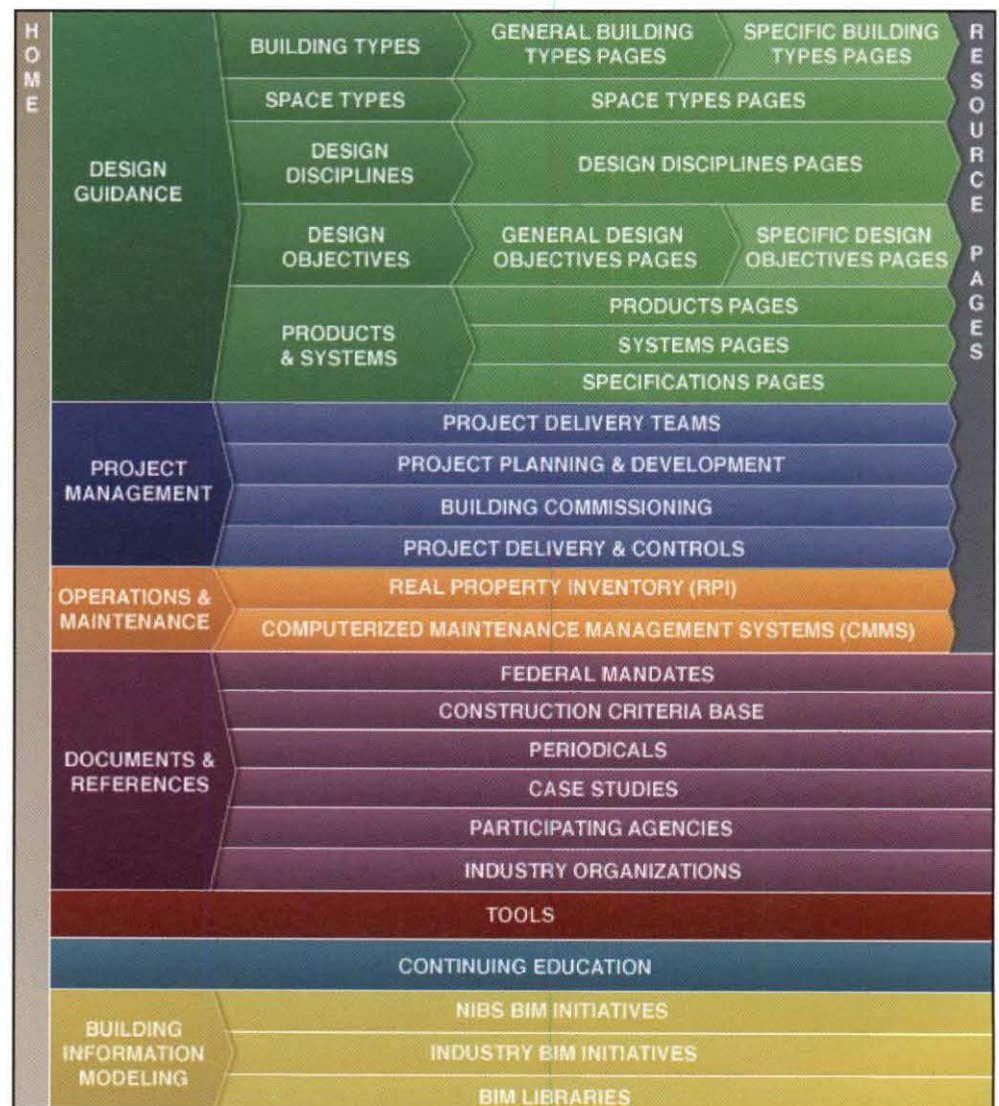
Development of the WBDG is a collaborative effort among federal agencies, private sector companies, nonprofit organizations, and educational institutions. Its success depends on industry and government experts contributing their knowledge and experience to better serve the building community. Twelve WBDG subcommittees were convened in

2008, leading to the revision and update of over two-thirds of the website pages. If you find issues that you feel are missing from the resource there is an easy way to identify the area of expertise that you may wish to add. However, the process to enter information does go through significant review to ensure accurate information is being included.

In this article, we will look at a few of the items that you will find in the WBDG as examples to support your job as facilities management professionals for educational institutions. You should begin to think of the resource as your first stop when seeking information about a facility.

The graphic below illustrates the layout and structure of information within the Whole Building Design Guide. This will also provide an idea of the scope and breadth of this unique resource.

The WBDG embeds links to outstanding authoritative references into the text which summarizes each topic as well as provides links to other key resources identified by the authoring committee of subject experts. APPA members may be especially interested in Operations & Maintenance, Tools,



Emerging Issues, or Building Information Modeling as shown in the following examples:

- **Real Property Inventory (RPI)** — Provides an overview on the type of system needed to maintain an inventory of an organization's assets and what is required to manage those assets.
- **Computerized Maintenance Management Systems (CMMS)** — This section contains descriptions of procedures and practices used to track the maintenance of an organization's assets and associated costs.
- **Computer Aided Facilities Management** — is an approach in facilities management that includes creation and utilization of information technology (IT) — based systems in FM practice.
- **Historic Buildings Operations and Maintenance (O&M)** — this is a unique and complex issue: balancing keeping old equipment running while contemplating the impact of installing new equipment that is more efficient. Further, cleaning of delicate surfaces and artwork require the use of products that are less likely to damage these surfaces, while providing a healthy environment for the building's occupants. Maintaining strict temperature and humidity control to protect artwork and antiquities is an additional challenge for the operations and maintenance staff. Extensive research has been done by the Smithsonian Institution regarding the effect of temperature and humidity on artifacts and the reports can be found on the WBDG.
- **Sustainability** — Sustainability as we know is an important aspect of the O&M process and of keen interest to owners and practitioners alike. A well run O&M program should conserve energy and water and be resource efficient, while meeting the comfort, health, and safety requirements of the building occupants.
- **Energy** — The impact of Energy Policy Act of 2005 (EPACT 2005) and the Energy Independence and Security Act of 2007 (EISA 2007) must all be considered in the facilities O&M process. Having the latest and most up to date information in one place is of significant value. Future updates that are planned will provide additional guidance in the following areas:
- **Janitorial/Cleaning** — As the building is opened, the keys are turned over to the janitorial, custodial, or housekeeping staff for interior "cleaning" and maintenance. What information should be passed to them so that they will be able to provide the proper maintenance for the new facilities and all the products contained therein? A Standardized Clean-

O&M activities start with the planning and design of a facility and continue through its life cycle.

ing System (SCS) provides a scientific approach to cleaning and provides for better property asset management. It most importantly provides a healthy workplace for the occupants.

Resource links

Energy Policy Act of 2005 (EPACT 2005):
www.wbdg.org/pdfs/epact2005.pdf
Energy Independence and Security Act of 2007 (EISA 2007): http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf

- **Access to O&M Manuals** — it is now widely recognized that O&M represents the greatest expense in owning and operating a facility over its life cycle. The accuracy, relevancy, and timeliness of well-developed, user-friendly O&M manuals cannot be overstated. Hence, it is becoming more common for detailed, facility-specific O&M manuals to be required as a part of the total commissioning process.

A critical component of an overall facilities O&M program is its proper management. Per the Federal Energy Management Program of the Department of Energy, the management function should bind the distinct parts of the program into a cohesive entity. The overall

program should contain five distinct functions: Operations, Maintenance, Engineering, Technology, and Administration.

O&M activities start with the planning and design of a facility and continue through its life cycle. During the planning and design phases, consideration should be given for professionally developed system-level O&M Manual(s), rather than the typical vendor-supplied equipment manuals.

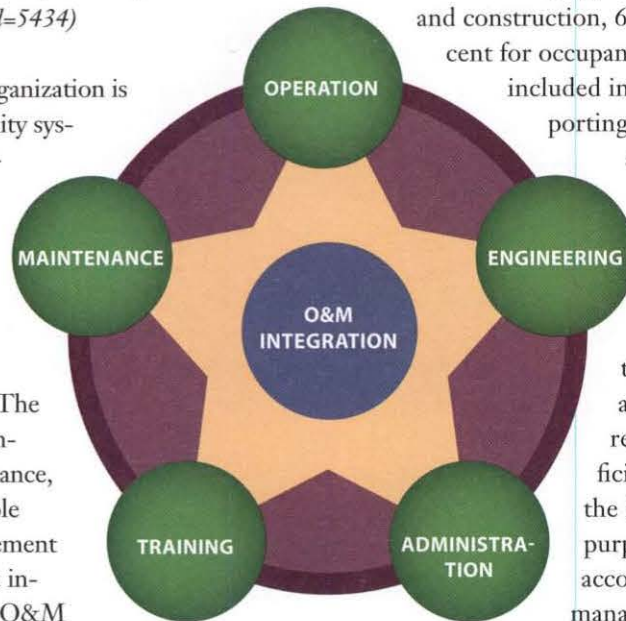
The Construction Operations Building Information Exchange (COBIE) initiative should also be a consideration. For larger complexes, O&M staff should consider system-wide integration and compatibility of proposed products with existing systems, including tools, equipment and cleaning supplies. This is where the full system commissioning process starts:

Construction Phase — Near the end of the construction phase and prior to turnover of the facility, vendor/manufacture O&M manuals are organized and provided to the owner/operator. Typically, personnel are trained in specified areas to support operations. Assurance that the manuals and training are provided is a part of the Building Commissioning process. In addition, typically part of the construction contract, warranties/activation dates and spare parts information should be organized and tracked.

- WBDG—Construction Operations Building Information Exchange (COBIE) (www.wbdg.org/tools/cobiex.php)
- FEMP O&M Continuous Commissioning Guidebook (www1.eere.energy.gov/femp/operations_maintenance/om_ccguide.html)
- GSA Building Commissioning Guide (04-2005) (www.wbdg.org/ccb/browse_doc.php?d=5434)

O&M Approach — The O&M organization is typically responsible for operating utility systems and for maintaining the built environment. To accomplish this, the O&M organization must operate the systems and equipment responsibly and maintain them properly. The utility systems may be simple supply lines/systems or may be complete production and supply systems. The maintenance work may include preventive/predictive/(planned) and maintenance, corrective (repair) maintenance, trouble calls, (e.g., a room is too cold), replacement of obsolete items, predictive testing & inspection, overhaul, and grounds care. O&M organizations may utilize a Reliability-Centered Maintenance (RCM) program that includes “the optimum mix of reactive, time- or interval-based, condition-based, and proactive maintenance (predictive/planned) practices. These primary maintenance strategies, rather than being applied independently, are integrated to take advantage of their respective strengths in order to maximize facility/equipment reliability, while minimizing life-cycle costs.” Particularly for heating, ventilating, and air conditioning (HVAC) systems, retro-commissioning is an option to improve operating efficiencies. The O&M organization is also normally responsible for maintaining records on deferred maintenance (DM), i.e., maintenance work that has not been accomplished because of some reason—typically lack of funds. However, in a life-cycle view one should look at the cost impact of not doing on the life of the facility. Currently we do not have the tools to evaluate properly the long-term cost of our decisions.

- Energy Star® Buildings Manual
- EPA I-BEAM — The Indoor Air Quality Building Education and Assessment Model (I-BEAM) is a guidance tool designed for use by building professionals and others interested in indoor air quality in commercial buildings.
- FEMP Operations and Maintenance
- Types of Motors
- Society for Machinery Failure Prevention Technology (www.mfpt.org/)
- LEED for Existing Buildings: Operations and Maintenance (www.usgbc.org/DisplayPage.aspx?CMSPageID=221)



- FEMP O&M training (www1.eere.energy.gov/femp/operations_maintenance/)

Life-Cycle O&M — According to the International Facilities Management Association (IFMA), the operating life cycle costs of a facility typically comprise 2 percent for design and construction, 6 percent for O&M, and 92 percent for occupants' salaries. O&M of the elements included in buildings, structures and supporting facilities is complex and requires a knowledgeable, well-organized management team and a skilled, well-trained workforce whether the functions are performed in-house or contracted. The objective of the O&M organization should be to operate, maintain, and improve the facilities to provide reliable, safe, healthful, energy efficient, and effective performance of the facilities to meet their designated purpose throughout their life cycle. To accomplish these objectives, the O&M management must manage, direct, and evaluate the day-to-day O&M activities and budget for the funds to support the organization's requirements. For federal agencies full life cycle costing is a requirement of the 2004 Executive Order 13327—Federal Real Property Asset Management.

- DOD UFC 3-410-05N Heating Systems Operation and Maintenance (www.wbdg.org/ccb/browse_doc.php?d=2899)
- Society for Machinery Failure Prevention Technology (www.mfpt.org/)
- The Pennsylvania Green Building Operations and Maintenance Manual (www.dgs.state.pa.us/dgs/lib/dgs/green_bldg/greenbuildingbook.pdf)

Computerized Maintenance Management Systems — O&M organizations may utilize Computerized Maintenance Management Systems (CMMS) to manage their day-to-day operations and to track the status of maintenance work and monitor the associated costs of that work. These systems are vital tools to not only manage the day-to-day activities, but also to provide valuable information for preparing facilities key performance indicators (KPIs)/metrics to use in evaluating the effectiveness of the current operations and to support organizational and personnel decisions. These systems are starting to be integrated more and more with Geographic Information Systems (GIS) and Building Information Modeling (BIM) technologies to increase/improve a facility's longevity.

Non O&M Work — Most O&M organizations typically

also perform work that is beyond the definition of O&M, but is so often required and performed by them, that the work often becomes a part of their baseline. This work is facilities-related work that is new in nature, and as such, should not be funded with O&M funds but funded by the requesting organization; e.g., from installing an outlet to support a new copier machine, providing a compressed air outlet to a new test bench, day porter services for special event set-ups and moves, or other minor facilities work of like nature to a complete room rehab and/or new, small construction projects. Methods available to document the built environment's condition and its maintenance/repair needs include the periodic Facility Condition Assessment (FCA).

EMERGING ISSUES

Teardowns. Demolishing old, historic buildings and replacing them with new structures that may not be as durable, sustainable or secure is a problem found in many communities in both the government and private sector. Currently there is no single tool available to solve the teardown problem but rather a combination of strategies works best. One tool available online is Teardown Tools on the Web, created as part of the National Trust for Historic Preservation Teardowns Initiative. This tool is intended as an easy-to-share, user-friendly, one-stop-shop highlighting approximately 30 tools and more than 300 examples of best practices being used around the country: (www.preservationnation.org/issues/teardowns/).

System-level O&M Manuals. Organizations that require a higher level of O&M information beyond the typical vendor equipment documents should ensure sufficient funds are set aside and appropriate scope/content requirements are written and specified during the planning stage. It is important to analyze and evaluate a facility from the system level, then develop procedures to attain the most efficient systems integration. System-level manuals include as-built information, based on the maintenance program philosophy. O&M procedures at the system level do not replace manufacturers' documentation for specific pieces of equipment, but rather supplement those publications and guide in their use. For example, system-level troubleshooting will fault-analyze to the component level, such as a pump, valve or motor, then reference specific manufacturer requirements to remove, repair, or replace the component. Documentation should typically meet or exceed client or commercial standards, such as ASHRAE Guidelines (e.g., 4-1993, Preparation of O&M Documentation for Building Systems) for format and content, and be tailored specifically to support the Owner's Maintenance Program (MP).

TOOLS

The Tools section of the Whole Building Design Guide offers information on a variety of desktop or Web-based tools used in the building industry. Current categories are:

- Code Compliance
(www.wbdg.org/tools/tools_cat.php?c=4)
- Cost-Estimating
(www.wbdg.org/tools/tools_cat.php?c=2)
- Design & Analysis
(www.wbdg.org/tools/tools_cat.php?c=1)
- Energy Analysis
(www.wbdg.org/tools/tools_cat.php?c=8)
- Life-Cycle Costing / Assessment
(www.wbdg.org/tools/tools_cat.php?c=3)
- Life-Cycle Management / Maintenance
(www.wbdg.org/tools/tools_cat.php?c=9)
- Professional & Construction Services
(www.wbdg.org/tools/tools_cat.php?c=6)
- Program & Project Management
(www.wbdg.org/tools/tools_cat.php?c=7)
- Specification Aids (www.wbdg.org/tools/tools_cat.php?c=5)

It is important to analyze and evaluate a facility from the system level, then develop procedures to attain the most efficient systems integration.

BUILDING INFORMATION MODELING (BIM)

A Building Information Model is a digital representation of physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life cycle from inception onward.

A basic premise of building information modeling is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update, or modify information in the model to support and reflect the roles of that stakeholder. The model is a shared digital representation founded on open standards for interoperability.

BIM standards have many objectives but one of the most important is to improve business function so that collection, use and maintenance of facility information is a part of doing business by the authoritative source and not a separate activity.

The scope of BIM is from the smallest part rolled up to the world or portfolio view, from inception onward in the life cycle of a facility and includes all stakeholders that need facility information from the designers to the occupants.

Numerous organizations have initiatives underway to develop a National BIM Standard. The following sections provide links and describe the efforts underway to develop a standard for information sharing that will help weave all stakeholders into a common fabric:

- **NIBS BIM Initiatives** — information on initiatives led by the National Institute of Building Sciences.
- **Industry BIM Initiatives** — information on industry initiatives from buildingSMART alliance associations to government programs pioneering BIM.
- **BIM Libraries** — information on reports, guidelines, roadmaps, white papers, articles and BIM tools.

CONTINUING EDUCATION

The WBDG now offers several continuing education courses built upon the content of the WBDG. For example, Accessible Design, (www.wbdg.org/education/accessible_design.php), is a one-hour AIA Learning Unit.

The WBDG website is offered as an assistance to the building community by the National Institute of Building Sciences (NIBS) through funding support from the Department of

A Building Information Model is a digital representation of physical and functional characteristics of a facility.

Defense, the NAVFAC Engineering Innovation and Criteria Office, the Army Corps of Engineers, the U.S. Air Force, the U.S. General Services Administration (GSA), the Department of Veterans Affairs, the National Aeronautics and Space Administration (NASA), and the Department of Energy, and the assistance of the Sustainable Buildings Industry Council (SBIC). A Board of Direction and Advisory Committee, consisting of representatives from over 25 participating federal agencies, guide the development of the WBDG. If you are interested in contributing to the Whole Building Design Guide, contact the authors. ☎

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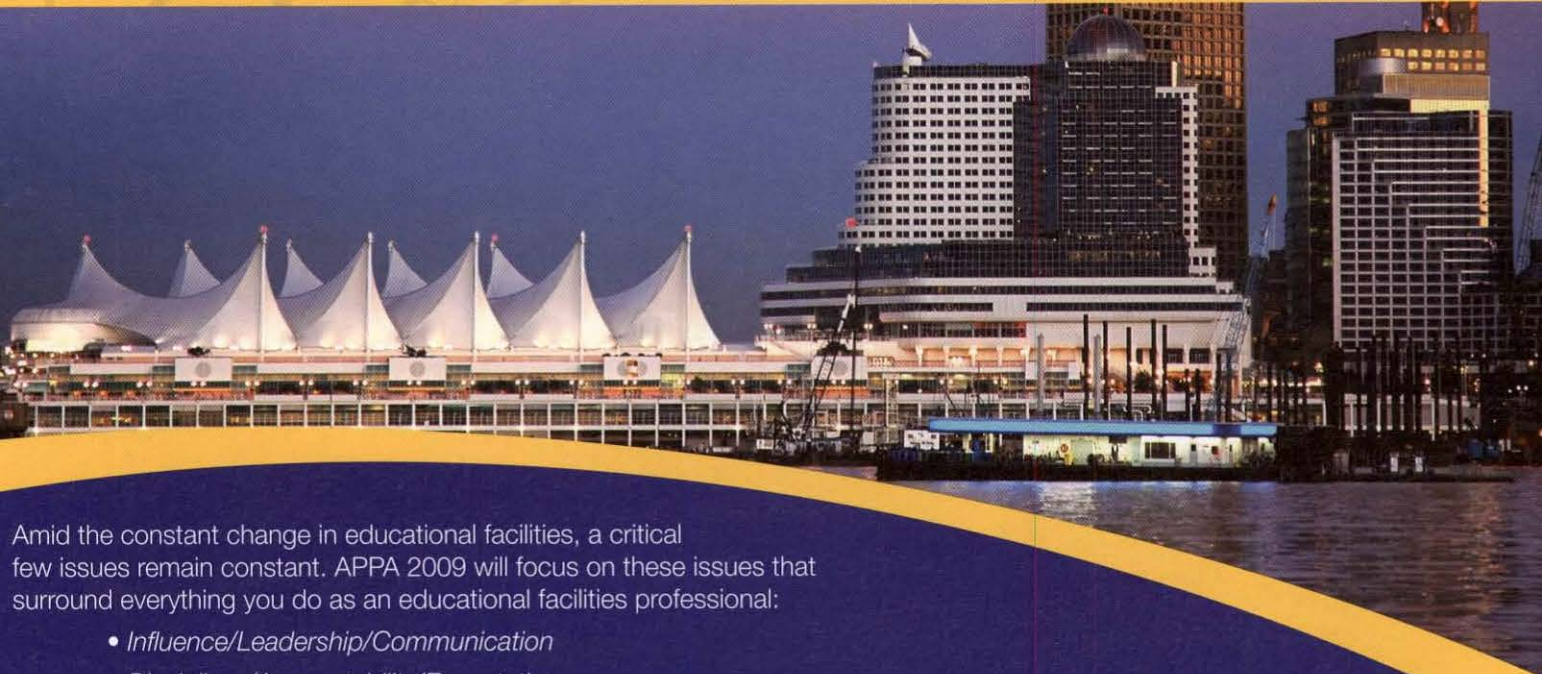
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Stephen R. Covey achieved international acclaim, and is perhaps best known, for his self-help book *The 7 Habits of Highly Effective People*, which was first published by Simon & Schuster in 1989 and has sold around 12 million copies world-wide. Covey has a Harvard MBA and has spent most of his career at Brigham Young University, where he was professor of organizational

behavior and business management. In addition to his MBA, he also has a doctorate which he completed at Brigham Young University. He is widely acknowledged as one of the world's leading authorities on the subject of time-management. Thousands of organizations across the world, including many of the Fortune 500 companies, have adopted his innovative techniques on leadership, teamwork, and customer-focused service.



Mike Abrashoff

Mike Abrashoff, former Commander of the Guided Missile Destroyer USS Benfold, has spent the last 4 years developing the management techniques he used during his tenure in the Navy into a methodology for application to the business community. His ideas are more fully explained in his book, *"It's your Ship,"* which has sold 160,000 copies to date and has been #9 on the *NY Times* Business Best

Sellers List and #7 on the *Wall Street Journal* List. He has been featured in the *Harvard Business Review* (March 2002) and *Fast Company* (April, 1999). Critical to the success of that initiative found in *"It's Your Ship"*, was the realization that people really do make the difference. Mike's model stresses a top-down, command, and, control management style which was very successful. But in today's world of instant communication and information flow that model has proven to be slow to react and ineffective. Through progressive leaders like Mike, the military services are now scrambling to adjust to the new order that Mike believes will result in the antithesis of top-down management — bottom-up or "GrassRoots Leadership" as Mike has coined it.



Dan & Chip Heath — The Heath Brothers

Chip Heath is a Professor of Organizational Behavior in the Graduate School of Business at Stanford University. He is the co-author of the book *Made to Stick: Why Some Ideas Survive and Others Die*, which has been a *New York Times*, *Wall Street Journal*, and *BusinessWeek* bestseller. Chip is also a columnist

for *Fast Company* magazine, and he has spoken and consulted on the topic of "making ideas stick" with organizations such as Nike, the Nature Conservancy, Microsoft, Ideo, and the American Heart Association. Chip has taught courses on Organizational Behavior, Negotiation, Strategy, and International Strategy. Prior to joining Stanford, Professor Heath taught at the University of Chicago Graduate School of Business and the Fuqua School of Business at Duke University. He received his B.S. in Industrial Engineering from Texas A&M University and his Ph.D. in Psychology from Stanford.



Dan Heath is a Consultant to the Policy Programs for the Aspen Institute. He is the co-author of the book *Made to Stick: Why Some Ideas Survive and Others Die*, which has been a *New York Times*, *Wall Street Journal*, and *BusinessWeek* bestseller. Dan is also a columnist for *Fast Company* magazine, and he has spoken and consulted on the topic of "making ideas stick" with organizations such as Microsoft, Nestle,

the American Heart Association, Nissan, and Macy's. In 1997, Dan co-founded and served as Editor in Chief of a startup publishing company called Thinkwell, which created from scratch an innovative new line of college textbooks. Thinkwell celebrates its 10th anniversary this fall.

Dan has an MBA from Harvard Business School, and a BA in the Plan II Honors Program from the University of Texas at Austin. Two proud (sort of) moments for Dan are his stint driving a promotional car called the "Brainmobile" across the country and his victory in the 2005 *New Yorker* Cartoon Caption Contest, beating out 13,000 other entrants.

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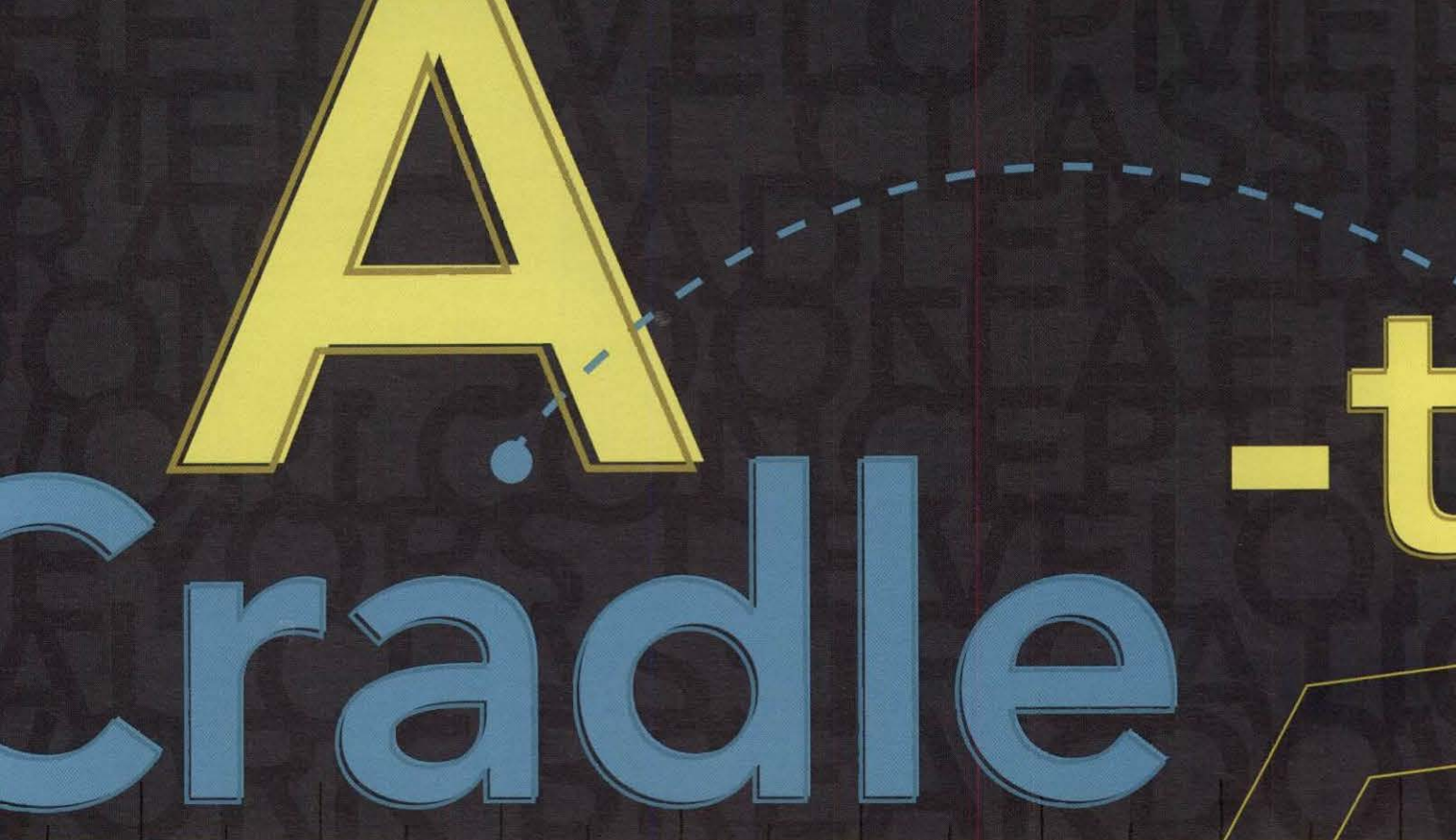
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A -t Cradle Integrator

CLASSIFICATION HISTORY

The development of the first elemental classification can be traced back to the United Kingdom. Soon after the Second World War British Quantity Surveyors developed an “elemental classification,” in essence a work breakdown structure (WBS) to provide cost containment as a result of the accelerated construction of post war and expansion boom.

From the British Ministry of Education, the methodology overlay was exported to other Commonwealth countries such as Canada, South Africa, and Australia, which all adapted the classification modified to fit their needs. The United States imported the economic measure from Canada, in the 1970s, which resulted in the adoption of the UNIFORMAT classification by the American Institute of Architects (AIA) and the U.S. General Services Administration (GSA). The general Uniformat I classification for the United States was then adopted and developed by the General Services Administration (GSA) and the American Institute of Architects (AIA) in 1972 intended for use as an economic estimating and design cost analysis.



o- Grave



ed Approach to Using UNIFORMAT II

By Richard C. Schneider and David A. Cain

INTRODUCTION TO UNIFORMAT II

The ASTM E1557/ UNIFORMAT II standard is a three-level, function-oriented classification which links the schematic phase Preliminary Project Descriptions (PPD), based on Construction Standard Institute (CSI) Practice FF/180, to elemental cost estimates based on R.S. Means Cost Data. With the UNIFORMAT II Standard Classification for Building Elements and Related Site work, stakeholders (owners, operators, design professionals, contractors) can effectively start adding value engineering (V.E.) to the process earlier, at the schematic design phase of a project - before irreversible decisions are taken and numerous cost-saving opportunities lost. The information in the UNIFORMAT II Preliminary Project Descriptions and elemental estimates now make it possible for Managers to integrate at the schematic phase: energy simulation, life-cycle costing, risk analysis, elemental preliminary construction schedules and cash flow projections, operations and maintenance (O & M) budget forecasts, and evaluations for the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Certification program.

The new and enhanced four level version of UNIFORMAT II was released in 1993 by American Society for Testing and Material (ASTM). This effort was developed by a joint task force including GSA, Construction Specifications Institute (CSI), R.S. Means, Tri-Services, and the Center for International Quality Standards (CIQS). In essence it was refined around a "holistic" life-cycle approach or cradle-to-grave concept.

This article presents one such approach for both Higher Education and one of the most progressive asset management governmental agencies, the U.S. National Park Service (NPS). Since higher education is not a single agency and a bit like herding cats, the following article makes a compelling argument to adopt this integrated approach from planning through to construction, operations and demolition. Figure 1.1 below illustrates the typical five phases of the Building Life Cycle. UNIFORMAT II currently integrates and overlays all five phases.

Elements are traditionally defined as "major components, common to most facilities that serve a given function, regardless of the design specification, construction delivery method, or ma-

terials used. In practice, an element can be considered any logical component of a Work Breakdown Structure (WBS) such as the foundation and roof of a building. From the facilities professional and project management perspective, the UNIFORMAT II classification is the ideal WBS for the economics of the design phase of a construction project to control scope, cost, quality, and time.

The classification has other practical applications for the facilities professional when standardized tracking, monitoring and reporting is desirable during the design, construction, and operational life of buildings. These include:

- Design-Build performance specifications and cost assemblies
- Developing function/cost models for value engineering from elemental estimates
- A checklist for brainstorming alternatives during the creativity phase of value engineering
- Facility (asset) management, inventory, and condition assessment
- Life-cycle costing and capital replacement budgeting
- Preliminary construction schedules and cash flow projections

NATIONAL PARK SERVICE

The U.S. Department of Interior's (DOI) National Park Service (NPS) is responsible for the management of 391 park units, which include many of the most recognizable and notable built facilities and natural and cultural resources in the U.S. Among many others, these include the likes of Independence Hall, the Statue of Liberty, and the Washington Monument.

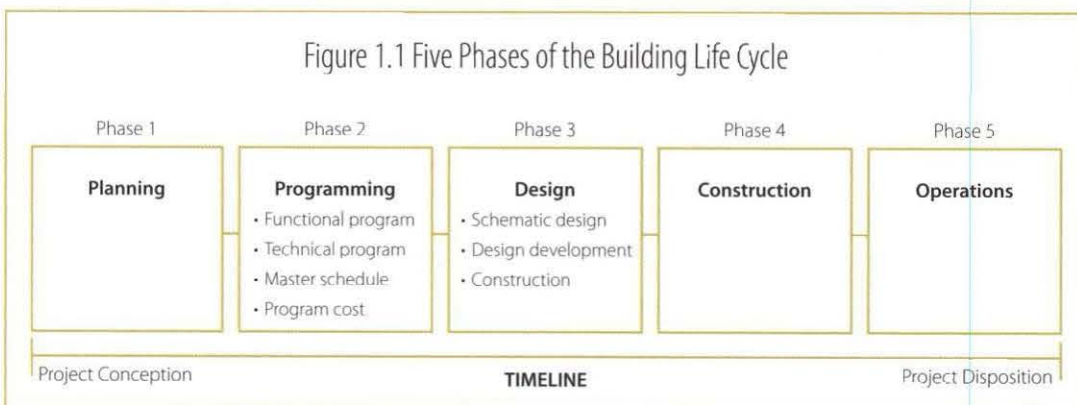
The NPS asset portfolio includes more than 27,000 buildings, 8,500 monuments, over 16,000 miles of trails, some 1,200 water systems, about 1,400 wastewater treatment plants, and more than 4,000 employee housing units. Many of these assets are heritage assets, which have historic or cultural significance that not only support DOI's mission, but also are part of the NPS core mission.

UNIFORMAT II

The capability to link the life-cycle elements of a facility or asset through an industry standard classification system results in multiple benefits to the facilities professional. UNIFORMAT II provides a work breakdown structure that can be used to seamlessly link an asset to associated equipment, equipment

to the inventory and condition assessment process and facility condition assessments to cost estimating. The NPS has used a cost estimating industry guideline to improve a facilities professional's ability to inventory assets and equipment, as well calculating the life-cycle costs for all significant facilities investment decisions.

Figure 1.1 Five Phases of the Building Life Cycle



UNIFORMAT II is a format for classifying building elements and site-work. It enhances project management and reporting at all stages of the building life cycle, programming, design, construction, operations, and disposal. The expanded version of the UNIFORMAT II classification system includes new elements and expanded descriptions, including a fourth level in the work breakdown structure (Figure 1).

Figure 1

L1	L2	L3	L4	Uniformat II Work Breakdown Structure
G BUILDING SITEWORK				
G20 SITE IMPROVEMENTS				
		G2010	ROADWAYS	
			G201001	BASES & SUBBASES
			G201002	DRAINS, INLETS, CURBS & GUTTERS
			G201003	PAVED SURFACES
			G201004	MARKING & SIGNAGE
			G201005	GUARDRAILS & BARRIERS
			G201006	RESURFACING
			G201099	OTHER ROADWAYS

Figure 2

Work Categories	
1000	Roads
2000	Trails / Walks
3000	Grounds
4000	Buildings
5000	Utilities
6000	Waterways / Aviation / Railroad
7000	Unique Assets (Fortifications, Memorials etc.)
8000	Support
9000	Administrative

Figure 3

Asset Code	WBS Component
1100 - Roads	G2010
1300 - Parking Area	G2020
1700 - Road Bridge	G9090
1800 - Road Tunnel	G9092
2100 - Trails	G2030
3100 - Maintained Landscapes	G2050
3600 - Campground	G2060
4100 - Building	A10
5100 - Water System	G3010
5200 - Waste Water System	G3020
5400 - Electrical System	G4010

One way of estimating facility life-cycle costs is to perform detailed quantity takeoffs for all materials and tasks associated with the construction, operation, and maintenance of the facility. Master Format 95™, a classification that is based on products and materials, is a logical format choice when preparing detailed cost estimates. But a cost estimate prepared using a format based on a listing of products and materials is time consuming, costly, and inappropriate at the early design stages. Estimates based on an elemental classification such as UNIFORMAT II provide the necessary cost information for the analyst to evaluate building alternatives in a cost-effective manner.

NPS WBS IMPLEMENTATION

The work categories shown below provide the framework for identifying the asset types that are managed by the NPS (see Figure 2.)

For example, the 5000 Utilities work category is the primary classification for Water Systems, Waste Water Systems, Electrical Systems, Radio Systems, Phone Systems, and IT Systems. This hierarchical system is similar to the UNIFORMAT II WBS and provides the front-end linkage of assets to its associated equipment. The next step was to make a connection between the NPS asset code and the UNIFORMAT II WBS. This linkage is shown in Figure 3, which represents only a portion of the total number of asset codes and their WBS components.

In many cases, the NPS created a new WBS component based on the official UNIFORMAT II WBS list. Figure 4 shows a partial list of WBS sub-components for Buildings at the fourth level.

The NPS made a connection between an asset and its equipment through the UNIFORMAT II work breakdown structure. The next step in this process was to use the classification system to establish an annual, comprehensive or life-cycle condition assessment link to the asset (WBS component) and its equipment (WBS sub-component). The Department of the Interior, which includes the National Park Service, is moving toward standard computerized maintenance management software (CMMS) for all of its bureaus.

Figure 4 (Buildings WBS; Partial List)

A10	ST	Buildings	
A1010	S1	SF	Foundation - Standard
A1020	S1	SF	Foundation - Special
A1030	S1	SF	Foundation - Slab on Grade
A2020	S1	SF	Basement Walls
B2010	S1	SF	Exterior Walls
B2020	S1	EA	Exterior Windows
B2030	S1	EA	Exterior Doors
B3010	S1	SF	Roof Covering
B3020	S1	EA	Roof Opening

Figure 5

Work Order	459778	CA-Water, 08-502 Requa Water System		WO Priority	5
Location/Asset	13255	Water System, Requa 08-502		Loc/Eq Priority	
Equipment/Feature				Equipment Up?	
Reported By	CHENSEL	Reported by Date	5/26/04	Work Type	FM
WO Status	CLOSE	WO Status Date	8/24/04	Sub Type	INCAA
GL Account				Park Alpha Code	REDW
WBS Component					
Sub Component					

Job Details		Park Planning	Problems/ Follow-up Work	
Plan Type	CA		Work Category	5000
Job Plan	1222		Work Activity	
Safety Plan			Problem Code	
PM	2319		Originating WO	

Figure 6

Work Order	459781	CA-Water, 12-502 Lane Ranch Water System	Status	CLOSE
Operations				
OP	Description	WBS Code	Done?	Deficiency (Y,N)
10	WELL SYSTEMS / WATER SOURCES	G301001	N	
20	POTABLE WATER DISTRIBUTION	G301002	N	
30	POTABLE WATER STORAGE	G301003	N	
40	FIRE PROTECTION WATER DISTRIBUTION	G301004	N	
50	FIRE PROTECTION WATER STORAGE	G301005	N	
60	NON-POTABLE WATER DISTRIBUTION	G301006	N	Y ←

Figure 7

Work Order	498296	Repair water line FY04		WO Priority	5
Location/Asset	13255	Water System, Requa 08-502		Loc/Eq Priority	
Equipment/Feature	115297	Pipe, Galvanized, 400 LF, 1.5 IN		Equipment Up?	Y
Reported By	CHENSEL	Reported by Date	7/19/04	Work Type	FM
WO Status	WACOST	WO Status Date	8/16/04	Sub Type	DM
GL Account		Warranty Date		Park Alpha Code	REDW
WBS Component	G3010	Quantity	1,500		
Sub Component	G301002	Measurement Unit	LF		

Job Details		Park Planning	
Plan Type	CA		
Job Plan	1222		
Safety Plan			
PM	2319		

Work Order	498296	Repair water line FY04	
Location / Asset	13255	Water System Requa 08-502	
Equipment/Feature	115297	Pipe, Galvanized, 400 LF, 1.5IN	
Totals			
CESS Estimate			

CREATING CONDITION ASSESSMENT WORK ORDERS

Generation of a Condition Assessment Work Order is required prior to conducting the condition assessment inspections. This requirement standardizes inspections throughout the NPS by creating a work order and associated Condition Assessment (CA) Job Plan against which identified deficiencies can be reported and costed for each asset.

The Condition Assessment Work Order includes the CA Job Plan for Water Systems and Preventive Maintenance application record with a frequency of one year and a start date for the inspection (Figure 5).

The Condition Assessment Job Plan for a "Water System" (CA 1222) includes inspection steps, each with a WBS sub-component and description as shown in Figure 6.

In addition to the CA Job Plan, an inspection guidance document with the same WBS sub-components was created for a Servicewide level of consistency and systematic process for conducting condition assessments. The primary components and sub-components for assets other than Buildings are found in *Uniformat G30 Site Mechanical Utilities*, while other support systems are found in *G20 Site Improvement* and *G40 Site Electrical Utilities*.

If a deficiency is identified during the condition assessment inspection (as shown in Figure 6) a follow-up work order is created that describes the deficiency in detail with quantities and other information required to estimate the cost of the corrective action.

Figure 8

CESS NPS Assemblies - Uniformat 1998 Specification (Modified)			
Uniformat Level	CESS	Example	
Level 1	Group Assembly	B	*****SHELL*****
Level 2	Group Assembly	B30	ROOFING
Level 3	Group Assembly	B3010	**ROOF COVERINGS**
Level 4	Assembly	B3010-010	Roof, Built Up Roofing System, Inspect membrane & remove debris
A	*****SUBSTRUCTURE*****		
A10	*FOUNDATIONS*		
A1010	**STANDARD FOUNDATIONS**		
A1010-005	Foundations, Concrete Wall Footing		CY
B	*****SHELL*****		
B10	*SUPERSTRUCTURE*		
B20	*EXTERIOR ENCLOSURE*		
B2010	**EXTERIOR WALLS**		
B2010-005	Log Structure, Chinking Between Joints		
B30	*ROOFING*		
B3010	***ROOF COVERINGS***		
B3010-010	Roof, Built-Up Roofing System, Inspect membrane & remove debris		Msf
B3010-012	Roof, Built-Up Roofing System, infrared moisture inspection		Msf
B3010-014	Roof, Built-Up Roofing System, minor membrane repair		Sq
B3010-020	Roof, Single Ply Thermoplastic (PVC), inspect & remove debris		Msf

ENSURING CONSISTENCY IN THE EVALUATION OF TRACKING AND MONITORING THE FINANCING OF BUILDING PROJECTS OVER TIME IS ESSENTIAL FOR ANY SUCCESSFUL PLANNING DESIGN AND CONSTRUCTION UNIT WITHIN THE ACADEMY OF EDUCATION.

LINKAGE TO COST ESTIMATING SOFTWARE SYSTEM (CESS) ESTIMATE

The Cost Estimating Software System (CESS) Estimate "button" in the NPS CMMS provides a direct link to the Timberline™ Estimating Tool (Figure 7). Since NPS Facilities professionals are not cost estimators, assemblies were constructed to assist the person preparing a cost estimate. An assembly is a collection of items used in performing a specific repair. For example, if 400 feet of galvanized pipe must be replaced, the estimate should include the excavation of the

pipe, bedding repairs, pipe replacement, fill and compaction of the trench. The assembly cost data is indexed based on a modified version of UNIFORMAT II. Figure 8 shows the UNIFORMAT II WBS being used as the front-end of CSI Masterformat Specification.

The cost assemblies make it easier to prepare an accurate estimate but also complete the process of linking an asset to its associated equipment. By including UNIFORMAT II WBS sub-components in the condition assessment process, it makes it possible to use this coding to reference an equipment deficiency to the corresponding cost assemblies in the Timberline™ database.

APPLICATION FOR HIGHER EDUCATION

Ensuring consistency in the evaluation of tracking and monitoring the financing of building projects over time is essential for any successful planning design and construction unit within the academy of education. Higher education continues to look for enhancements for better reporting project man-

USING UNIFORMAT II HAS A SIGNIFICANT BENEFIT OF PERFORMING AN ECONOMIC ANALYSIS BASED ON AN ELEMENTAL FRAMEWORK INSTEAD OF ON A PRODUCT-BASED CLASSIFICATION IS THE REDUCTION IN TIME AND COSTS FOR EVALUATING ALTERNATIVES AT THE EARLY DESIGN STAGE. THIS ENCOURAGES MORE ECONOMIC ANALYSES AND MORE EFFICIENT CHOICES AMONG BUILDINGS AND ELEMENTS.

agement tools at all stages of the building life cycle, planning, programming, design, construction, operations, and disposal.

Using UNIFORMAT II has a significant benefit of performing an economic analysis based on an elemental framework instead of on a product-based classification is the reduction in time and costs for evaluating alternatives at the early design stage. This encourages more economic analyses and more efficient choices among buildings and elements.

Other UNIFORMAT II benefits include providing a standardized format for collecting and analyzing historical data to use in estimating and budgeting future projects; providing a checklist for the cost estimation process as well as the creativity phase of the value engineering job plan; providing a basis for training in cost estimation; facilitating communications among team members regarding the scope of work and costs in each discipline; and establishing a database for automated cost estimating.

The following highlights the benefits of applying UNIFORMAT II in design specifications, cost estimating, and cost analysis. A proposed summary sheet for presenting building and site work elemental costs with cost analysis parameters provides an efficient tool for communicating economic information to decision makers in a quickly understood, concise format that helps them make project choices. Owners, developers, programmers, cost planners, project managers, schedulers, architects and engineers, operating and maintenance staff, manufacturers, specification writers, and educators will find the classification useful.

SUMMARY FOR UNIFORMAT II (ASTM STANDARD E1557 AND CSI PRACTICE FF/180)

Today, elemental classifications are utilized primarily for design estimates. In the U.S., the GSA, DOI, and the military

services have been the main proponents of UNIFORMAT. There has also been an increasing number of state public works and education departments call for it as mandatory. The academy of higher education has yet to adopt UNIFORMAT II, as a standard format. Additional applications for UNIFORMAT II have been developed and embedded into design-build, construction management at risk performance specifications, facilities technical programs requirements, building condition assessment, many recent software tools, and capital replacement budgeting.

With ASTM and CSI supporting the use of UNIFORMAT in North America, it is anticipated that the classification will gain widespread acceptance and save the construction industry significant sums of money resulting from the use as the industry gold standard.

UNIFORMAT II, by all measures, is the new standard and asset life-cycle project management tool for all facilities professionals, particularly the federal government and higher education. UNIFORMAT II adds the depth of elemental classification for building specifications, cost estimating and analysis. UNIFORMAT II provides the structure in cost information necessary to initiate life cycle costing, energy analysis, and value engineering studies from the beginning stages of the design process, i.e., schematic design.

Lack of these elements has always been major obstacles to an effective and comprehensive methodology. Today, NPS has positioned itself to become a public sector leader in managing its diverse asset portfolio and infrastructure. This article has attempted to illustrate first, how the NPS has embedded UNIFORMAT II in its Asset Management Plan and the merits of its work breakdown structure. ⑤

NOTES

1. Charette, Robert P. and Marshall, Harold E. *UNIFORMAT II Elemental Classification for Building Specifications, Cost Estimating, and Cost Analysis*, U.S. Department of Commerce, Technology Administration, National Institute of Standards and Technology (NIST), 1999, Gaithersburg, MD.
2. Construction Specifications Institute. *Uniformat™: A Uniform Classification of Construction Systems and Assemblies* (Alexandria, VA: The Construction Specifications Institute, 1998).
3. Dell 'Isola, A.J and Kirk, S.J. *Life Cycle Costing for Design Professionals*, 2nd Edition, (New York, NY: McGraw-Hill, Inc., 1995).
4. Royal Institution of Chartered Surveyors. *Standard Form of Cost Analysis* (London, England: The Building Cost Information Service, 1969 (Reprinted December 1987)).

Rich Schneider recently retired as an asset management specialist for the National Park Service, Prescott, AZ. This is his first article for *Facilities Manager*, and he can be reached at richbarb@cablone.net. David Cain is associate vice president for facilities planning and operations at California State University-East Bay; he can be reached at david.cain@csueastbay.edu.

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GIVE ME OR G



IMAGINE you are sitting on a bench on a college campus on a summer day.

You see bikers glide by, hear a carillon in the distance and notice the cheery chatter of students talking in a nearby courtyard. The patio in front of you is clean, a big sycamore tree offers shade and you're impressed by the handsome brick walls. The fragrance of jasmine on a nearby fence is pretty sweet and the kaleidoscope of colors provided by a mass of flowers is impossible to miss. So is the vibrant turf all around. The area is free of litter, sidewalks are neatly edged and gurgling water cascades off a nearby sculpture. You're impressed because the campus landscape is just as nice as the building architecture you see at a glance. The setting is really special and it makes you feel good. You're thinking this is just what a college campus should look like. Looks simple enough. But, you're not fooled. You know that a lot of planning and hard work is needed to create a safe and beautiful campus and how difficult it is to keep it looking well maintained. Often, one of the toughest challenges is controlling where people go. We're facilities folks so we just can't allow students and everybody else to walk or bike or drive or park wherever they want to. There has to be some organization, a comprehensive plan, and features in the campus landscape that result in a theme of crowd control. Without these, there are no rules and the campus can look frayed and worn, just like the new blue jeans students wear these days.





LIBERTY

IVE ME

BRICK

BY FRED GRATTO

WHAT STUDENTS WANT

Just like everybody else on this planet, students want good, dependable, timely, service. It's pretty obvious that they prefer a relationship with their campus similar to the ones they have with their supermarket, department store, favorite restaurant, insurance company, and bank. They want what they want when they want it and they want convenience. "Students increasingly are bringing to higher education exactly the same consumer expectations they have for every other commercial establishment with which they deal. Their focus is on convenience, quality, service, and cost" (Levine

& Cureton, 1998, p. 12). Think about what you want from your bank, for example. You probably want an ATM on every corner, a parking space right next to it, and no extra fees. Likewise, students want convenience. For instance, my observation is that they don't want to have to walk very far to their next class, although they might jog for miles to get some exercise. Shortcuts are a common problem. "Many colleges and universities do not define pedestrian routes clearly. When this is the case, students often create their own routes across campus grounds" (Brandon & Spruch, 2008, p. 361). When students are at liberty to take the shortest route possible, they can create paths or damage landscaping. At the University of Florida, one of our favorite and most effective ways to intercept paths and redirect people is to build brick seat walls. In addition to helping people stay on sidewalks, they make other significant contributions because they provide seating, define spaces, protect landscaping, and add to the aesthetic appeal of the brick gothic architecture on our campus. Brick curbs, even those just one brick high, also do an effective job guiding people. It's amazing what just a little elevation and a subtle hint can do to determine where people walk.

Before



After



IN ADDITION TO HELPING PEOPLE STAY ON SIDEWALKS, THEY MAKE OTHER SIGNIFICANT CONTRIBUTIONS BECAUSE THEY PROVIDE SEATING, DEFINE SPACES, PROTECT LANDSCAPING, AND ADD TO THE AESTHETIC APPEAL OF THE BRICK GOTHIC ARCHITECTURE ON OUR CAMPUS.

WHAT THE UNIVERSITY WANTS

Universities want a lot of things such as high quality students, excellent faculty, supportive alumni, high quality academic programs, a great football team, a beautiful campus, and a good reputation. They also want students to learn. "Colleges and universities establish conditions to attract, satisfy, and retain students for purposes of challenging them to develop qualities of the educated person, including a capacity for complex critical reasoning, communication, leadership, a sense of identity and purpose, an appreciation for difference, and a commitment to lifelong learning" (Strange & Banning, 2001, p. 2). We typically think of learning as taking place only in classrooms but research has confirmed that students establish relationships and learn from each other on campus in environments outside the classroom. Settings such as courtyards, patios, or a

Before



After



grassy knoll can contribute to the learning experience. A brick plaza, for example, can be a quaint space that provides seating, an opportunity to linger and meet with friends and, one day, memories of special days at one's alma mater.

Because college students spend more time out of class than in class, it is important to provide settings that encourage social interaction. "In fact, when asked what they learned in college, graduates frequently mention that participation in activities outside of class increased their confidence, competence, and self-assurance" (Marchese, 1990, p. 5). Bonds formed in college help students reconsider what they believe, encourage them to consider the perspectives of others, and incline them to evaluate their own priorities in life. "They amplify, dampen, or distort the force of the curriculum, instruction, codes of conduct, and institutional norms. They can trump the best teacher's ace and stalemate the most thoughtful dean. Relationships are labs for learning to communicate, empathize, argue, and reflect. Encounters

IT'S EVIDENT THAT STUDENTS NEED PLACES ON CAMPUS TO SPEND TIME WITH EACH OTHER AND SO DO FACULTY, STAFF, VISITORS, ALUMNI, AND ALL THE REST OF US.

with others who have diverse backgrounds and strongly held opinions create the context for increased tolerance and integrity" (Chickering & Reisser, 1993, p. 392).

It's evident that students need places on campus to spend time with each other and so do faculty, staff, visitors, alumni, and all the rest of us. Arranging environments is a powerful technique used to influence human behavior. This is why, at the University of Florida, we work hard to build and maintain places and spaces where people can get together without much effort. We use brick features to encourage people to slow down and sit a while, rather than just hurriedly pass from one place to another. But, there has to be a good reason for them to do this.

One reason might be an inviting brick patio or courtyard that provides seating and encloses a space to help people feel safe and comfortable. We build these magnets for people to get together. It is pretty gratifying to transform a sandy, boring space that people used to just walk across, into an invigorating place that is an attractive destination for conversation, entertainment, reading, or just relaxing. We know we have captured the potential of a setting and reclaimed another worn out space when we see people reading, talking, studying, sipping Starbucks, or just enjoying the moment in a beautiful place that they never noticed before.

WHAT YOU WANT

You want to accomplish something that matters, something that makes a difference, right? It's no fun for the grounds crew to maintain an area that looks bad when they get there and just as bad when they leave. This used to happen on our campus when we would mow and weed-eat sandy, dirty, lawns that barely hung on because they were so walked out. We don't dislike turf, in fact, we love it. Few aspects of a campus environment are prettier than lush green grass, nicely mowed and edged. But, we weren't making a difference by just mowing dirt. We woke up to reality and realized that grass just wasn't going to grow in certain areas because of relentless foot-traffic.

In several areas, we built beautiful brick paver settings that control and enhance pedestrian movement. Most of the sand is gone now and the areas we renovated need little or

no maintenance. We have saved time and can go do other tasks. Another interesting fact to keep in mind is that plants and grass are pretty particular about how much sun and shade they get. The temperature, rain, and snow also impact them. Bricks don't care about any of these things. By building brick surfaces and courtyards we have turned problems into assets and reduced our maintenance load. That's what I want. You might want the same thing.

PLANTS AND GRASS ARE PRETTY PARTICULAR ABOUT HOW MUCH SUN AND SHADE THEY GET. THE TEMPERATURE, RAIN, AND SNOW ALSO IMPACT THEM. BRICKS DON'T CARE ABOUT ANY OF THESE THINGS. BY BUILDING BRICK SURFACES AND COURTYARDS WE HAVE TURNED PROBLEMS INTO ASSETS AND REDUCED OUR MAINTENANCE LOAD.

MORE BRICKS, LESS LIBERTY

One of our goals at the University of Florida Physical Plant is to create positive environments and eliminate negative ones. Not all over campus certainly, but in several places, we have done this by not allowing people the liberty to go wherever they want to go. Bricks and more bricks have cleaned-up our large campus by eliminating paths and have created friendly places for people to spend time with each other. There are 51,000 students at the University of Florida. That's a lot of people and they create many opportunities and challenges for our facilities group. When classes change, it's an amazing sight. Fortunately, our design solutions involving brick work well and will endure for many years. They could work on smaller campuses also since we all have the same problems, in different sizes. Of course, there are plenty of other ways to manage foot-traffic and guide people. Posts and rope, stone walls, shrubs, fences, benches, railings, and bike racks work well also. But, for us at the University of Florida, brick is our solution of choice. Besides, here's what Pink Floyd said: "All in all, it's just another brick in the wall." ⑤

NOTES

1. Brandon, R. & Spruch, A. (2008) *Inspired Landscapes*. American School and University, November.
2. Chickering, A. & Reisser, L. (1993). *Education and identity*. San Francisco: Jossey-Bass Publishers.
3. Levine, A. & Cureton, J. (1998). Collegiate Life: An obituary. *Change*, May/June, Vol. 30 Issue 30.
4. Marchese, T. (1990). A new conversation about undergraduate teaching: An interview with Professor Richard J. Light, Convener of the Harvard Assessment Seminars. *AAHE Bulletin*, 42 (9), 3-8.
5. Strange, C. & Banning, J. (2001). *Educating by design*. San Francisco: Jossey-Bass.

Fred Gratto is assistant director of physical plant at the University of Florida, Gainesville, FL. He can be reached at fgratto@ufl.edu.

Before



After

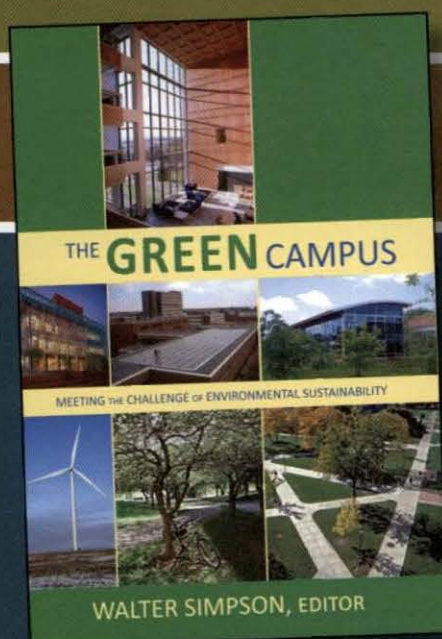


The Green Campus:

Meeting the Challenge of Environmental Sustainability

Edited by Walter Simpson

Published by APPA, *providing leadership in educational facilities*



The Green Campus anthology explores the meaning of genuine environmental sustainability—in global and local terms—while profiling excellent campus environmental programs. The book offers guidance and inspiration to campus leaders and advocates who promote sustainability within institutions of higher education, and addresses these fundamental questions:

- What does it mean to be a green campus?
- Is it possible for educational institutions to effectively reduce their sizable environmental footprints?
- How can individuals make a difference and successfully advocate more environmentally sustainable campus operations?
- Is the education community poised to create solutions to our most vexing environmental problems?

This comprehensive resource is a vital tool that administrators, faculty, staff, students, and concerned citizens can use to help the education community take a leadership role in environmental stewardship.

Contributors include:

David Orr
Tony Cortese
Jim Hansen
Judy Walton
Alex Wilson
Brian Kermath
Michael Philips & Andrea Putman
Will Toor
Karyn Kaplan
Dean Koyanagi
Jack Byrne & Nan Jenks-Jay
and many more!

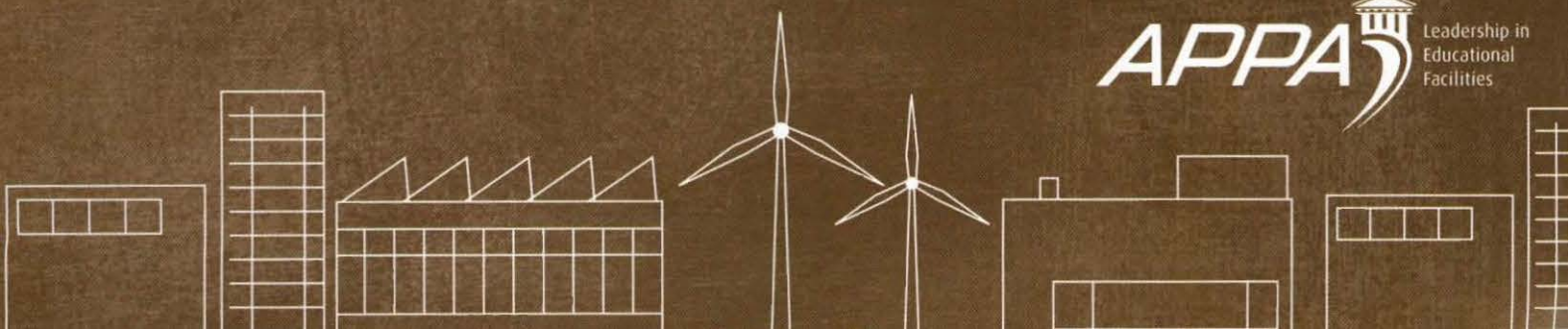
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Published 2008, soft cover, 361 pages

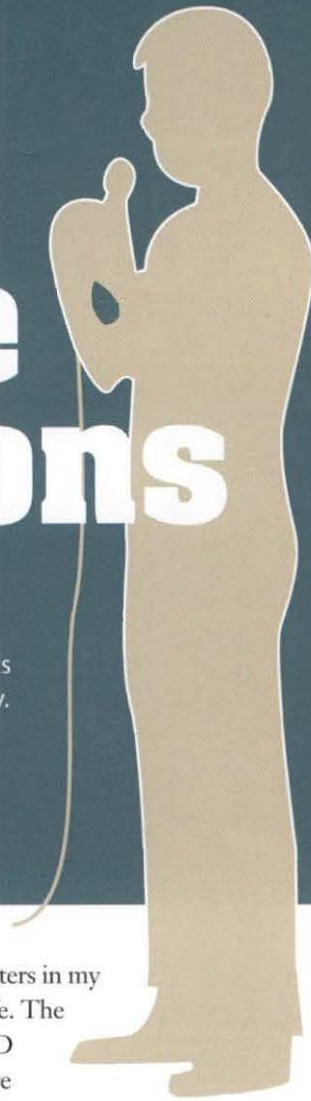
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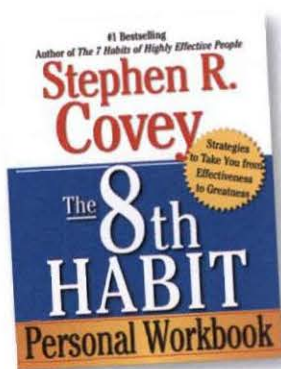
The 8th Habit – From Effectiveness to Greatness

By Stephen R. Covey

Simon and Schuster Inc., New York

259 pages, softcover, \$12.50

Reviewed by William M. Elvey



A few years ago I was trying to decide whether to read Stephen R. Covey's book, *The 8th Habit – From Effectiveness to Greatness*. I have been a long-time Covey convert since the 90s after reading his earlier book, *The 7 Habits of Highly Effective People*. So I thought what more could Covey possibly contribute to the subject of managing organizations and leading people that could be worthwhile at that time in my life? Well, I decided to read

the book and I couldn't have been more delighted with the result. *The 8th Habit* is definitely a winner of a book that all facilities professionals must keep on their bookshelf for future use and reference!

Never mind whether you have previously read *The 7 Habits of Highly Effective People* or not. Covey manages to reintroduce them in a way that seems as relevant today as it was back then. After all, the principles he introduced in *The 7 Habits* are "universal, timeless, and self-evident."

I read *The 8th Habit* so many times – highlighting specific passages and placing tabs on pages – that I consider it to be highly

relevant to everyday encounters in my professional and personal life. The book also comes with a DVD of short films that readers are invited to watch after most chapters in the book. These film vignettes (many of which have won prestigious national and international film awards) "enable you to see, feel, and better understand the material." I strongly agree that the book and DVD created a most powerful learning experience.

Part 1 of the book covers the general topic of "finding your voice." Covey does an excellent job of modeling this concept as follows:

- the whole person – mind, body, heart, and spirit
- 4 needs – live, learn, love, and leave a legacy
- 4 intelligences/capacities – physical, mental, emotional, and spiritual
- 4 attributes – discipline, vision, passion, and conscience
- Expressing your voice – need, talent, passion, and conscience

Part 2 of the book is "Inspiring Others to Find their Voice." In chapter 8, the author begins to focus on trustworthiness and modeling character and competence. After all, he says, "90 percent of all leadership failures are character failures." In chapter 9 he refers to the "voice of trustworthiness," and in chapter 10, he talks about "blending voices – finding the third alternative." I can't tell you how important finding the third alternative has been, in making my role as a facilities professional successful.

The book starts to reach a crescendo in chapter 13, "The Empowering Voice – Releasing Passion and Talent." As a former naval officer I got a special kick out of Covey's discus-

sion regarding the "Principle of Stubborn Refusal." Sorry folks, if you want to learn about this concept then you'll need to read the book! There is also a highly relevant example for all facilities professionals in this chapter called "The Case of the Janitors (Tutoring Manual Workers into Knowledge Workers.)"

Covey ties everything together in the second to last chapter in a concept he calls "The Sweet Spot." Think of the Sweet Spot as the intersection of Personal Greatness (vision, discipline, passion, and conscience), Organizational Greatness (vision, mission, and values) and Leadership Greatness (the 4 roles of leadership – modeling, pathfinding, aligning, and empowering).

The book's closing chapter is titled "Using Our Voices Wisely to Serve Others." As facilities professionals and leaders of our respective facilities management organizations, isn't that something that we're expected to do every day?

In summary, please consider *The 8th Habit – From Effectiveness to Greatness*, by Stephen R. Covey, a must-read book. And be sure to pass along a strong recommendation to your friends and colleagues!

Bill Elvey is director for facilities management at University of Texas at Dallas. He is APPA's president and can be reached at wmelvey@utdallas.edu.

It's Your Ship

By Captain D. Michael Abrashoff
Warner Business Books, New York
212 pages, hardcover, \$24.95
Reviewed by Connie Hagberg

Is "your ship" heading in the wrong direction, or actually slowly sinking? If so, the leadership practices discussed in *It's Your Ship* should benefit your operations in today's treacherous waters!

In *It's Your Ship*, Captain D. Michael Abrashoff unfolds the fascinating story of his command of the *USS Benfold*. Upon boarding, Abrashoff realized quickly that he had a ship loaded with cutting-edge technology, but burdened with low productivity by the crew.

Abrashoff was quite savvy in this challenge by beginning with himself. Change must begin from "the top-down." Abrashoff recognized he must improve his own leadership skills before he could improve his ship.

He began his journey by spending several months analyzing every process on the *Benfold*. He asked everyone "Is there a better way to do what you do?," at which he aggressively listened to their thoughts. In addition, Abrashoff encouraged people to "have fun, for fun's sake!" Another practice included "Do the right thing for your people, not yourself." Very powerful and sound business

advice! He wisely understood that every leader sets the tone for the organization.

Under Abrashoff's command, the *USS Benfold*, which was a key player in the Persian Gulf fleet, experienced amazing cost savings to winning the highest gunnery score in the Pacific Fleet.

Are you on board? If so, retain a copy of *It's Your Ship* for you and your crew!

Connie Hagberg is assistant manager for quality assurance and employee development at Middle Tennessee State University, Murfreesboro, TN. She can be reached at chagberg@mtsu.edu; this is her first article for *Facilities Manager*.

Made to Stick

By Chip Heath and Dan Heath
Random House, Inc. New York
291 pages, hardcover, \$16.40
Reviewed by David Gray

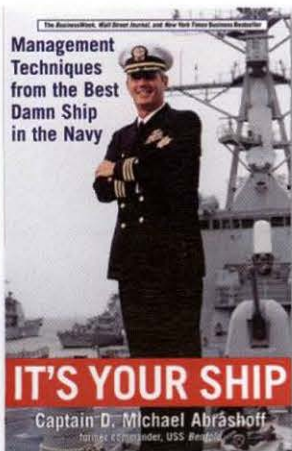
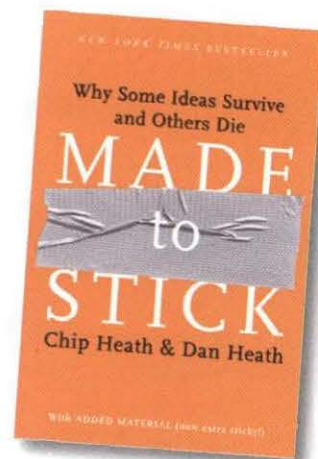
How effective is your organization in communicating ideas? Do good ideas and important messages struggle to gain traction? If so, you are probably like many of us. Authors Chip Heath and Don Heath address this problem in this best-selling book *Made to Stick*.

This book is about the process of "nurturing ideas so they will succeed in the world." The authors review the presentation of dozens of ideas and messages; from the telling of urban myths to the writing of health warnings about sun exposure. Some subjects are true, some not, some important, some not, some interesting and some definitely not. The purpose is to look for common threads that make these ideas "understandable, memorable, and effective in changing thoughts or behavior". In other words, "sticky."

In researching stickiness, the authors present six principles to combat the primary villain to effective communications – namely the "Curse of Knowledge." These principles provide help to the presenter in shaping the content and format of their messages as well as piquing the interest of the audience in the message itself.

Chip Heath is a professor of organizational behavior in the Graduate School of Business at Stanford University. Brother Dan Heath is a consultant at Duke Corporate Education. A former researcher at Harvard Business School, he is a co-founder of Thinkwell, an innovative new-media textbook company. Both brothers contribute to *Fast Company* magazine. 

David Gray is assistant vice president, facilities services, at Middle Tennessee State University, Murfreesboro, TN. He is APPA's vice president for professional development and can be reached at dgray@mtsu.edu.



Professional Development

WRAP-UP

APPA PROFESSIONAL DEVELOPMENT SUCCESSFULLY EXECUTES ANOTHER OFFERING OF INSTITUTE, SPECIAL PROGRAMMING & TOOLKIT

By Suzanne Healy

January 2009 marked another successful APPA professional development offering with the Institute, Toolkit, and Special Programming: Sustainability in Tampa, Florida. The week welcomed attendees from all across the APPA membership and saw a new batch of 79 professionals begin their journey for development with APPA.

Our Institute for Facilities Management continues to be APPA's cornerstone offering as we deliver content in the core areas of general administration, operations & maintenance, energy & utilities, and planning, design, and construction. The dedication of the Deans — Mary Vosevich, General Administration, Jay Klingel, Operations & Maintenance, Lynne Finn, Energy & Utilities, and Don Guckert, Planning, Design, and Construction — once again showed through with the variety of course offerings that provided a broad range of topical material for the facilities professional. Students had the opportunity to interact with experts who brought not only their knowledge but their experiences from vast backgrounds that provided a rich environment.

Our Supervisor's Toolkit hosted 23 up-and-coming supervisors who were joined by Nancy Yeroshefsky and Judy Clay as their trainers for the week-long session. Participants were exposed to the newest techniques and learned how to operate in their new role as supervisors or honed their skills as they advance through the facility organizations they support. The Toolkit participants benefit tremendously from this tailored program designed for facilities professionals, by facilities professionals.

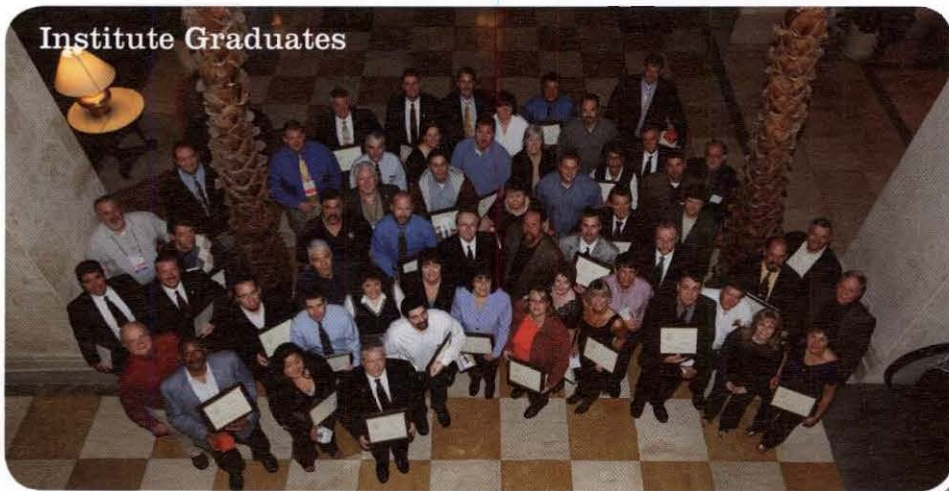
As APPA continues its commitment to provide cutting-edge topical content, the offering of "Special Programming: Sustainability" marked a successful session. Facilitated by those entrenched in the movement, experts were invited from North America to share best practices, lessons learned, and visions of where the movement will take education next.

As the week drew to a close we celebrated with ceremonies for the class of January 2009, and recognition of our Toolkit participants as well. Sharing the achievement with old friends and new colleagues made for a great evening.

Please visit www.appa.org for more information and registration dates. We hope to see you soon! 📍

Suzanne Healy is APPA's director of professional development. She can be reached at suzanne@appa.org.

Institute Graduates



Toolkit Participants



January 2009 Institute Graduates

Christopher Adams, Capstone Management
Gregory Andersen, Pennsylvania State University
Patricia Bonta, Chicago School of Professional Psychology
James Brown, Sodexo/Florida
Alex Buehler, University of Regina
Clarence Burgen, Washtenaw Community College
Heather Churchwell, University of Saskatchewan
Kelly Clemons, Pennsylvania State University
James Coffey, Wake Forest University
Alan Daeke, North Carolina State University
Terese Dale, California Polytechnic State University
Roger Dick, Wichita State University
Janet Donohoe, University of Iowa
Ron Dulceak, College of Dupage
Joseph Emory, University of North Carolina/Chapel Hill
Terry Fenstad, Westfield State College
Juergen Frieze, University of Colorado/System Office
Stephen Gillette, Tennessee State University
Lisa Glover-Henderson, University of Rochester
Steve Greife, Metropolitan Community College/Kansas City
Michiel Ham, San Jose State University
Cecil Hamm, Butler University
Linda Hardyman, Middle Tennessee State University
Neil Hart, University of Texas MD Anderson Cancer Center
Paul Hawley, Georgia Tech Research Institute
Sharon Hayes, Lewis & Clark College
Lawrence Hess, Lakeland College/Canada
Kathy Hicks, Arkansas State University
Rex Hilligoss, Eastern Illinois University
Rebecca Houle, University of Maine/Farmington
Brian Humphries, Northwestern College/Minnesota
Julie Im, Middle Tennessee State University
Edward Keller, University of North Carolina/Greensboro
Miles Kitasato, University of California/Los Angeles

Joseph Knoll, Emerson College
Linda Longo, Purdue University/Main Campus
Jeffrey Loss, Bucknell University
Darcy Loy, Illinois State University
Viron Lynch, Weber State University
John Marker, University of Nebraska/Lincoln
Ed Matecki, Southern Illinois University/Edwardsville
Kyle Mills, Kutztown University of Pennsylvania
Chris Mizelle, University of Alaska/Anchorage
Sam Narinejit, Florida International University
Robert Nugent, University of British Columbia
Juan Nuñez, University of Texas/Austin
Patrick O'Neill, Le Moyne College
Patricia Patterson, University of Saskatchewan
Nathan Platt, University of Alaska/Fairbanks
Kevin Powell, University of Pennsylvania/School of Medicine
Deb Randol, Central College
Ben Reid, University of Texas/Austin
Kenneth Riebert, University of Maryland College Park -
Facilities Management
Luis Rivas, Texas Tech University Health Sciences Center
Shawna Rowley, Weber State University
Lionel Sanders, Eastern Illinois University
Scott Selden, St. Paul Academy and Summit School
John Skyberg, San Jose State University
David Speagle, McMaster University
Roger Thue, South Dakota State University
Jeffrey Tillett, Milton Hershey School
Jeff Turner, Ohio County Schools
James Waddington, Rowan University
Brian Wallar, Purdue University/Main Campus
Jim Ward, Webster University
William Weakley, University of Michigan
Brian Wenger, Guilford College
David Willis, Lane Community College
Robert Yearick, Pennsylvania State University/McKeesport
Margaret Young, University of Iowa

January 2009 Toolkit Participants

Zufer Bander, The Principia School
Samantha Bryand, University of North Florida
Rey Buenaventura, Salk Institute for Biological Studies
John Congdon, Dartmouth College
Adam Cordova, Regis University
Jennifer Cortez, Arkansas State University
Manuel Duarte, Salk Institute for Biological Studies
Virgil Esguerra, Salk Institute for Biological Studies
Kerry Evans, Montana State University
Tom Fallwell, Indiana University/Bloomington

Thomas Halladay, Brigham Young University/Utah
Joseph Hill, University of Texas/El Paso
Jessica Joiner, University of North Florida
Dale Parmer, University of Missouri/Columbia
Barbara Russell, Georgia Tech Research Institute
Mark Samon, University of North Florida
Miguel Sarabia, University of Texas/El Paso
Doris Slick, The Principia School
Randy Sutherlin, Indiana University/Bloomington
Reginald Wagner, Regis University
Nancy Webb, University of South Florida
Dena Williams, University of North Florida
Blake Zollinger, University of Alaska/Anchorage



Survey says: Campus Security Tops List

Facilities Strategy Team Researches APPA, E&I Member Facility Procurement Priorities

By William M. Elvey and Maggie Kinnaman

A recent survey on priorities for campus facilities revealed that locks and security are top concerns. It's not a surprising result. Physical security for everyone on campus is of critical importance, but in the current economic recession, there's another kind of protection that's just as important for higher education: financial security. More on that later.

Conducted jointly by APPA and E&I Cooperative Purchasing in November and December of 2008, the survey reached more than 300 APPA members and purchasing professionals at E&I member institutions. With more than 1,600 member colleges and universities, E&I is the nation's largest higher-education purchasing consortium.

The survey, which garnered a 10 percent response rate, asked respondents about the level of importance, suppliers used, and most recent fiscal year spend for specific facilities categories on their campuses:

- HVAC
- Building automation controls
- Locks, security devices, and door access
- MRO supplies and building materials
- Electrical equipment and supplies
- Mechanical and plumbing supplies
- Fire alarm and fire protection
- Emergency response systems

Topping the list, with 84 percent of respondents placing it as a high priority, were locks, security devices, and door access, followed by emergency response at 83 percent and fire alarms at 81 percent.

Following in the priority rankings were building automation, 79 percent; HVAC, 70 percent; electrical, 56 percent; maintenance, repair, and operations, 28 percent; and mechanical and plumbing, 13 percent.

STRONG CONTRACTS

The survey was an outgrowth of work conducted by the E&I Facilities Strategy Team. The team's purpose is to assist in strengthening existing and future facility contracts, and its members include both facilities and procurement professionals from various regions, including those from private and public academic institutions, and some who are particularly interested in sustainability issues as they apply to facilities contracts.

Revealing strong agreement among campus facilities and purchasing professionals, the survey results showed that they are advocates for and implement-

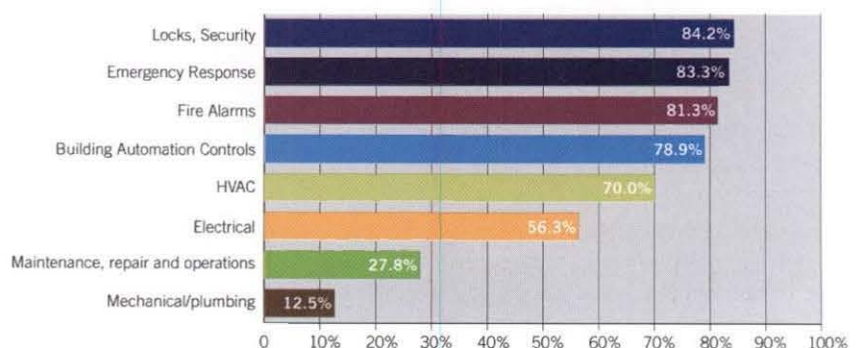
ers of the strategic directions of their institutions. The facilities-purchasing partnership is one that the E&I Facilities Strategy Team is very interested and involved in (we are both Strategy Team members, and Maggie serves on the E&I board of directors).

The survey is helping the Facilities Strategy Team better understand where to concentrate its efforts. Formed last year, the team first met in October 2008 to discuss building a portfolio of best-of-breed facilities contracts. Because the Facilities Strategy Team is composed of members from both the facilities and procurement worlds, it has the right people to conduct proper research and reach sound conclusions. The value of this cross-department collaboration already is revealing itself through the innovative work of the team and its early results.

We started by reviewing E&I's existing facilities contracts and determining their focus and scope. We then determined the type of spend data we would use in our analysis, and identified a target list of suppliers and opportunities. Finally, the group made strategy recommendations that would guide the future planning and implementation of E&I facilities contracts.

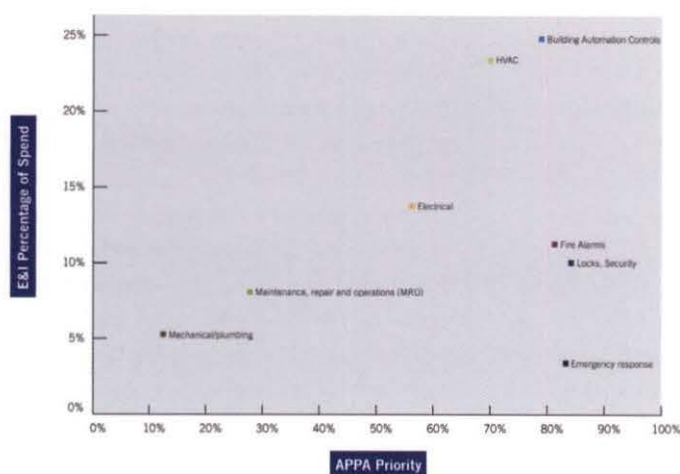
The team's recommendations for management of the facility contracts portfolio included a trifecta of facilities-contracts planning: growing existing contracts, working with a second genera-

Campus Facilities Priorities



tion of contracts (RFPs for contracts to replace initial ones), and establishing new contracts. The survey grew directly from this work, as the group quickly determined the need to gather spend information from APPA and E&I members. The graph below maps E&I spend data against the category priorities as identified by APPA respondents. This analysis reveals a wide range of opportunity across the spend spectrum.

E&I Percentage of Spend against APPA Priority



COST SAVINGS AND PURCHASING COOPERATIVES

With economic conditions that many believe are worsening, cost-savings is non-negotiable. In the world of higher education, perhaps the hardest hit are facilities management departments, which are the largest administrative units on most campuses.

At the intersection of acquiring what colleges and universities need to upgrade and maintain facilities, and saving money and time, is cooperative purchasing. We can think of no better way to optimize scarce facilities resources than to procure smartly by encouraging procurement officers to utilize cooperative purchasing contracts. One example of a purchasing cooperative is E&I, which provides members with access to a diverse portfolio of high quality national and regional contracts from best-in-class suppliers. E&I's member-driven competitive solicitation process has been

validated by the National Institute of Governmental Purchasing (NIGP).

It is critical to continue this collaboration between our associations. We are doing it through the formation of teams that will issue RFPs for several new contracts—some in direct response to the priorities established by the APPA/E&I survey results. Through competitive solicitations that include requirements and services needed by the institutions, spend data, vendor/

supplier support, member involvement, a strong cooperative purchasing initiative will result in what we all want access to: best-of-breed contracts. There are opportunities for APPA members interested in helping draft RFPs and evaluate responses to both participate in this project and engage in APPA as an association.

As we continue our collaboration, we realize that it is important for the team to effectively communicate the results of our work—especially what we're doing across association lines—to make best-of-breed contracts available to higher-education institutions. With member support and usage, the contracts will initially be a source of financial and contractual benefits. As usage and volume grow for each new contract, the strength of this strong cooperative purchasing initiative will be a source of financial and contractual advantages that will benefit both higher education and the vendor/supplier community.

Just as physical security was a high priority for APPA and E&I members, we also share the responsibility to contribute to the financial security of the institutions we serve. That, in the end, is a major goal of cooperative purchasing, and one that is especially critical in these demanding financial times.

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BIM for Educational Facilities Managers: Change is on the Horizon

By Jim Whittaker, P.E., EFP, CFM

While the concepts of BIM have been around for almost two decades now, we are just now beginning to truly realize and measure the benefits of BIM. Most of these benefits are realized in the "birth" phase of a building by the architectural, engineering, and construction (AEC) community. But will BIM have a similar impact on educational facility

asset management through the life cycle of our facilities? Will BIM help provide a reliable basis for decisions during the facility's entire life cycle?

Currently, building information models are being used on many live projects across the globe and beginning to gain momentum in the educational environment. Most of these projects are exploiting the potential of BIM (modeling) in the design and construction stages by using BIM (models) for not just visualization, but clash detection, automated code checking, improved stakeholder coordination and schedule integration, and to study construction sequencing. The benefits are real and have been documented to significantly reduce change orders, improve production efficiency, and shorten construction schedules. Some notable projects and campuses that have realized favorable returns on investment through the implementation of BIM include:

- Emory University – Psychology Building
- Georgia State University – Library
- University of Trinidad & Tobago
- University of Washington – Research Building
- Arizona State University – School of Journalism
- Indiana University
- Lawrence Berkeley National Laboratory – e-Lab

These projects are just a sample of how the introduction of BIM in designing and constructing campus facilities can reap favorable returns. Yet, they just scratch the surface of the true vision of BIM. What

do these favorable benefits have to do with overall facility asset management and the life cycle of our educational facilities?

BETTER DECISION-MAKING

BIM is all about collecting data about your facilities once, at the point of creation, and using it to make better decisions throughout the life of the facilities. There are staggering costs associated with the inadequate interoperability of AEC design software systems, facilities management software systems, and redundant paper records management. Most of these costs are borne by owners and operators during ongoing facility operation and maintenance. These are costs in which many of us can relate, including: manually updating equipment and asset records, polylining CAD drawings, revising occupancy reports or drawings, and time wasted digging through stacks of manuals and building documentation to find needed information about facility assets.

BIMs provide a better means to form relationships with the information about facilities to enable analyses that could not be previously performed with disparate data. The goal of all this is savings, pure and simple, and the savings can be significant. Savings in the design and construction phases are already being recognized. The true value may come later in the life of the facility when facility managers need information that was gathered during design and construction and can use it to operate more efficiently. BIM will allow different stakeholders to insert, extract, update, and modify information in the BIM to support their roles.

Other predicted benefits of BIM to educational facility managers include:

- Minimizing effort and cost to re-collect data
- Convenience and accessibility of e-documentation
- Efficiencies of what-if scenarios of moving people and equipment

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OVERCOMING OBSTACLES

The road to deployment of BIM for the life of a facility will not be easy and there are many obstacles that will need to be overcome. Ground is being broken by some industry leaders, including the U.S. Coast Guard and the General Services Administration (GSA). The University of Trinidad and Tobago is also embarking on an entire campus-wide integrated virtual building and construction BIM to extend into facilities operation and management. To achieve this vision several obstacles we will need to overcome include:

- The need for considerable outreach and education across institutions to gain endorsement and participation.
- BIM-based FM tools are nowhere near the level of design tools such as Autodesk's Revit, Graphisoft's ArchiCAD, and Bentley Systems.
- Even though Autodesk has created FMDesktop to support integrated facility lifecycle processes, it still requires substantial manual data entry.
- We have worked for years to maximize our use and value of CMMS and CAFM systems and will most likely become more entrenched and unwilling to change our way of doing business.

These obstacles can and will be overcome in due time. In the meantime, there are many things that can be done on a limited and cost-effective basis to prepare for the future of BIM. Understanding and developing standards consistent with BIM is of utmost importance. Wholesale changes to data hierarchies, structures and standards may not be necessary to adopt national CAD standards, CSI Omniclass, or other geospatial standards. Recognizing both the benefits and limitations of BIM for facilities asset management is another opportunity. Finally, you as educational facility managers should initiate discussions

with your existing FM technology vendors to see what their strategy to incorporate BIM will be in the short and long term.

Some of you may be in the process of implementing BIM today. For others, it may be years before BIM actually takes hold in your facilities. Yet, now is the time to prepare by at least educating yourself about BIM and the future of FM tech-

nologies. If we do not prepare to embrace this change, we as facility managers will be caught unprepared in this impending storm. And have no doubt; there is a BIM storm on the horizon. ☺

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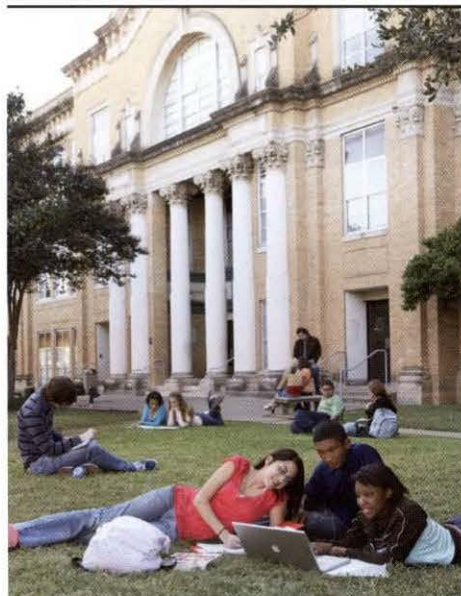
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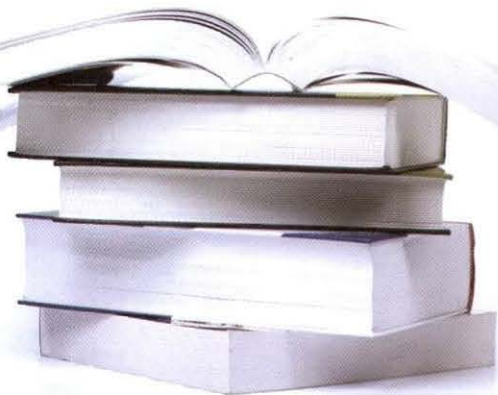
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Book Review Editor: Theodore J. Weidner, Ph.D., P.E., AIA



In keeping with this issue's theme, both books focus on BIM, building information modeling. My first exposure to BIM was in 1979 when I visited with a team developing software to design Herman-Miller of-

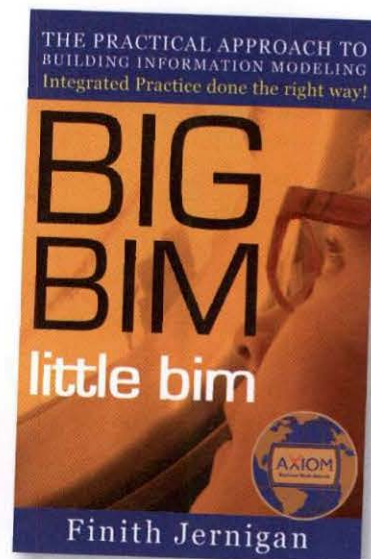
fice systems that would include the complete parts list; H-M's Action Office system was flexible but had a large number of parts. Then in graduate school I learned about Desautel System's software that was eventually used by Frank Gehry to design his non-rectilinear designs; they could not have been erected without the connection between the designer and fabricator afforded by the software.

As has been explained elsewhere, BIM is the future for facilities managers. No major capital project should be delivered to a college or university without a BIM model and associated databases. These

books will provide you with the rationale and understanding to demand BIM.

BIG BIM LITTLE BIM

By Finith Jernigan, 4Site Press, Salisbury, Maryland, 2007 328 pages softcover, \$29.95 (\$12.90 Kindle)



This relatively short book provides a general overview and arguments in support of BIM. Building information modeling, as described elsewhere in this issue, is a new way for architects and engineers to look at buildings and building information. Those of us in the facilities management business don't see this as a new issue but as a new way of getting the information we've been asking for with every project.

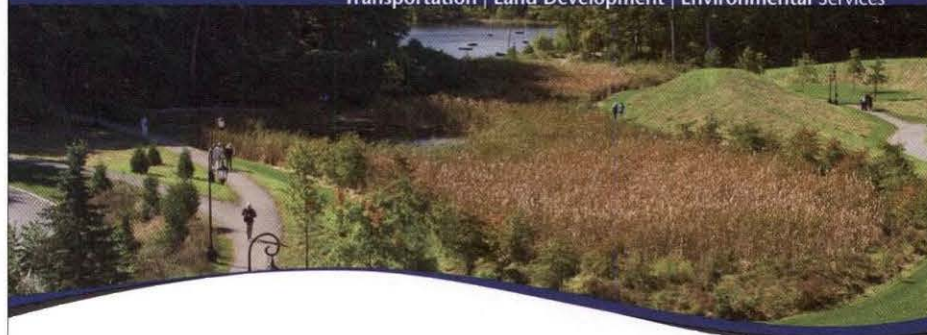
Concepts about BIM and bim, the specific software, are presented to the architect who has the option of walking away from a project after the construction is complete. This is viewed as value-added material to the A/E as they sell their professional skills to the owner or facilities manager.

While there is no argument from this side of the readership the focus should be on convincing the A/E, and the



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manufacturers who provide the foundation information. The author makes good arguments that are solid and supported. This book is ideal for the reader who is trying to get a good grasp as to why BIM vs. CAD. It is affordable and informative; important factors when attempting to make the leap into BIM or any other new technology.

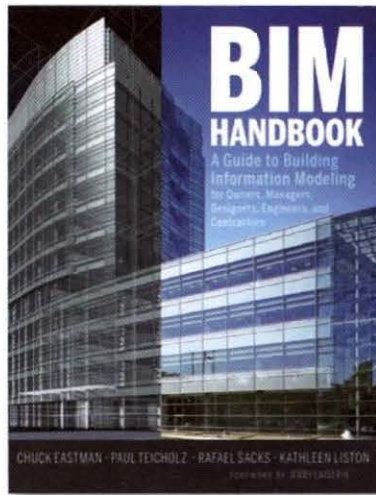
BIM HANDBOOK, A GUIDE TO BUILDING INFORMATION MODELING FOR OWNERS, MANAGERS, DESIGNERS, ENGINEERS, AND CONTRACTORS

By Charles Eastman, Paul Teicholz, others,
John Wiley and Sons, New Jersey, 2008
490 pages, hardcover, \$71.99

I have some biases to review; there are a few authors I rely on with regards to the use of computers and technology. Two of three authors I can think of right now have worked on this book. Having revealed my biases, this book meets or exceeds my expectations in what a *BIM Handbook* should contain.


This book describes the difference between BIM and bim in chapters 1 through 3. A foundation is provided about BIM and comparative information about bim. BIM is building information modeling while bim is an application packages such as REVIT, Bentley Systems, ArchiCAD, DPro-filer, and others. Comparisons of these packages at the end of chapter 2 are helpful if you haven't made a decision about your BIM application already. The initial differences are found in the parametric-based packages vs. the object-based packages. Without getting too technical, parametric BIM allows the user to identify values for the numerous parameters of each building element; wall height, width, thickness, and any penetrations. Object-based BIM relies on present objects typically found with pipes, conduit, cable trays, and other objects that can be manufactured and installed (ignoring the need to cut them).

While not obvious at first, every BIM



package is challenged by compatibility and interoperability issues. None of these software packages and their associated databases are simple and translation between different systems invariably means important data can be lost because there is no clear standard for BIM

yet. Translation between parametric and object-based systems is even more difficult because of the fundamental definitions used in the software.

Regardless, as a reference goes, this book is informative and helpful. Substantial glossaries, indices, and bibliography make this project useful to the learner and learned. It is a must if you're trying to decide between BIM software package and to get a solid understanding of what can be done with BIM or a specific application. 

Ted Weidner is assistant vice chancellor of facilities management & planning at the University of Nebraska-Lincoln and president of Facility Asset Consulting. E-mail him at tweidner2@unlnotes.unl.edu.

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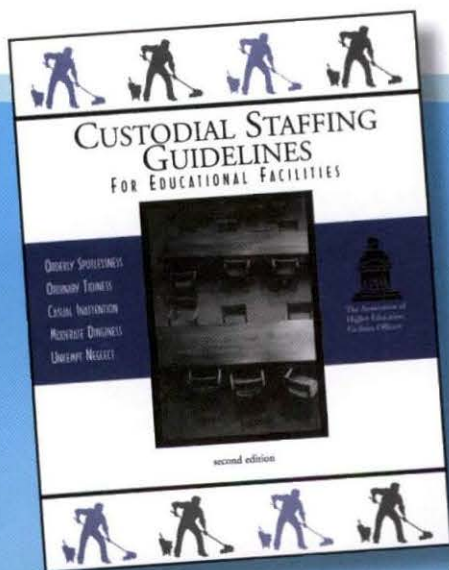
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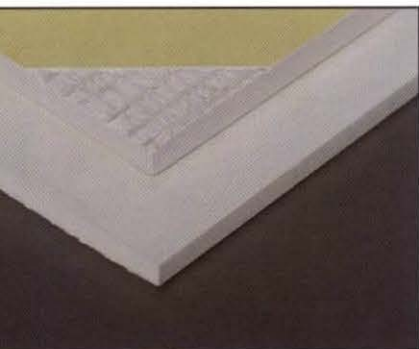


Compiled by Gerry Van Treeck

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Highfield Manufacturing Company, a global producer of high-quality security systems for the electric, gas and water utility industries, has introduced the Multi-Maxx™ electric meter bar, a patented security device designed to lock off banks of ringless-type electric meter enclosures. As tamper-



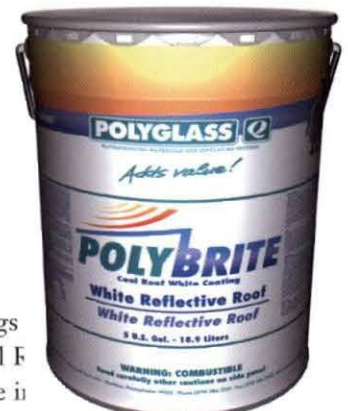
ing, energy diversion, and meter theft become increasingly common, Highfield's Multi-Maxx offers one of the industry's

best solutions for addressing this growing problem and ensuring a safe environment. The Multi-Maxx is made of weather resistant, hardened carbon steel that makes tampering or drilling virtually impossible. For additional details about Highfield Manufacturing Company visit www.highfield-mfg.com.

Delta Controls has received the Frost & Sullivan Best Practices Award for Product Innovation & Differentiation. Delta won this award for their integrated building automation solution encompassing HVAC, lighting, and access control. Delta has been at the forefront of delivering universal BACnet platforms to its customers with a unified infrastructure that improves building efficiency, maximizes cost savings, and reduces greenhouse gas emissions. Additionally, the award recognizes Delta's sound business strategies which include superior product development in controls and user interface, dedicated customer service and partnership programs, continued global expansion, and active involvement in major issues pertaining to intelligent and green buildings. To view the entire white paper regarding the 2009 Best Practices Award for Delta Controls visit www.deltacontrols.com.




Polyglass USA, a manufacturer of self-adhesive membranes and underlayments as well as roof coating systems, recently introduced its line of Polybrite coatings and accessories as part of its Kool F highly reflective products provide i



and long-term performance for virtually any roofing system. Every Polybrite product provides superior protection and improved energy efficiency, deflecting damaging heat and solar UV rays while helping to maintain cool building temperatures. Because of their energy efficient characteristics, Polybrite products comply with Cool Roof Rating Council (CRRC) ratings for solar reflectance and thermal emittance. They are also Miami-Dade County-approved. For more information about Polyglass USA visit www.polyglass.com.

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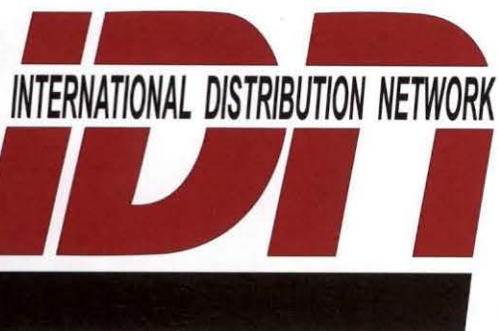


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