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**Letter from the President**

It’s been a busy year for the Building Commissioning Association, as we continue to enjoy and promote the booming building commissioning industry. A recent highlight included BCA Day, which took place in Chicago the day before the National Conference on Building Commissioning (NCBC). BCA has long played an active role in NCBC, ranging from sponsorships to presenting at the conference and, of course, attendance by numerous BCA members – nearly 50 in 2010. This connection posed a great reason for us to hold our annual meeting in conjunction with NCBC.

BCA Day featured a packed agenda highlighted by a focus on Association goals and strategies, accompanied with knowledge sharing, and rounded out by networking and catching up with old friends. I’d like to personally thank all of the BCA members who attended BCA Day and made this planning meeting a success. Your efforts continue to directly impact the advancement of our Association. Additionally, our members who presented at NCBC did an excellent job: Doug Chamberlin, H. Jay Enck, Gerald Kettler, Michael Kuk, Carl Lundstrom, Paul McCown, Karl Stum, John Villani and Bryan Welsh.

In efforts to promote commissioning best practices and expand our outreach to the building community at large, we have joined PECI in an exciting Cx training and education project. Commonly referred to as the “Training Initiative,” this commissioning education program is spearheaded by PECI and supported by U.S. Department of Energy, New York State Energy Research and Development Authority, California Energy Commission, California Commissioning Collaborative, Northwest Energy Efficiency Alliance and BCA. The focus of the Training Initiative is to build a commissioning curriculum that will be offered broadly through e-learning and hands-on courses across the country to help speed the entry of skilled and qualified professionals into the commissioning industry. BCA will take a lead role in working with PECI to develop this curriculum. In addition to boosting the pool of skilled Cx Authorities, BCA will also benefit from an increased profile through PECI’s promotion of the program.

In closing, I’d like to take this opportunity to welcome and congratulate our newest expansion in the BCA – the formation of a provisional Texas Chapter. This development demonstrates the BCA’s continued growth and the dedication of our members in bolstering the reputation of the Association for ever greater impact in the building industry.

Sincerely,

Ed Faircloth, LEED AP  
BCA President
The idea of having BCA day at the National Conference on Building Commissioning (NCBC) took shape at the Leadership Conference in February. Many firms have limited budgets to send their employees to two events. NCBC is a great event, so it was agreed to have a BCA day the day before NCBC began.

The BCA Day Committee felt we had an opportunity to continue the work of the Leadership Conference with chapter and committee meetings open to every member. Our annual meeting was held after lunch, followed by a learning session in the afternoon and a reception.

Bright and early the BCA International Board met for its monthly meeting. The highlight of the meeting was a petition with 13 signatures requesting a Texas Provisional Charter. Currently each region has one chapter: Canada, Central, Mid-Atlantic, Northeast, Northwest, Southeast and Southwest. This would be the first new chapter within any existing region. The Southwest Region includes Arizona, California, Colorado, Nevada, New Mexico, Oklahoma, Texas and Utah, a very large region. The vote was unanimous and the goal of the Texas Provisional Chapter is to reach full chapter status by December 31, 2010.

After the board meeting, the morning session began with committee meetings, continuing the work from the Leadership Conference to implement our 3-5 year strategic plan for the BCA. The goals, strategies and action plans for best practices, education and industry promotion were discussed in several committee meetings including: Certification and Professional Development. The Marketing and Outreach Committee had the opportunity to have members attend each of the committee meetings.

Late morning began some chapter meetings with representatives of the Southwest, the new Texas Provisional Chapter, Central, Southeast and Northeast. Communication between the committees and chapters is very important to achieving the BCA’s goals. At one point the Central Chapter yelled over to the table of where the Northeast Chapter was meeting, asking a question of how the Northeast gets sponsors for their events. You don’t get that kind of interaction in a conference call.

continued on p. 8
The term Exterior Enclosure Commissioning (EECx) emerged in the years following the publication of the ASHRAE/NIBS Guideline 3 — 2006: Exterior Enclosure Technical Requirements for the Commissioning Process (http://www.wbdg.org/cb/NIBS/nibs_613.pdf). Prior to this, and in part due to ASHRAE’s concept of Total Building Commissioning, typical tasks associated with EECx were practiced by exterior enclosure consultants, technical Architects, and contractors involved in unique, iconic, critical (Class IV), and high performance building projects. Today, confusion and miscommunication exists surrounding the concept of exterior enclosure commissioning amongst many Owners and MEP Cx Agents.

Mostly due to ambiguity and lack of clarification with regard to the scope of services requested by Owners, the EECx process appears open to varying interpretation and cost. Miscellaneous organizations at the federal and local levels include EECx as a requirement for new construction projects, including GSA, Navy, Army Corp of Engineers, City of Houston, State of Wisconsin, and numerous others. Projects pursuing LEED certification can achieve one “design innovation” point or one “enhanced commissioning” point for undertaking EECx; however, the majority of these organizations provide no basic outline of the services that defines or clarifies the scope of EECx, not even a scope to qualify for LEED points. EECx is also pursued under numerous project delivery methods, including Design-Build where the contractor pursues the EECx task, which potentially can confuse the process further and which ignores the notion of third party, independent and objective commissioning wherein the Owner controls the process. To be defined as “commissioning,” EECx should be initiated in the pre-design and design “verification” phases, and continues through the construction “validation” phases and into occupancy of the facility. Without this comprehensive process, the concept will fall short of its true potential. Exterior enclosure performance issues should be detected or prevented early on in the project rather than be identified mid-way through construction by a performance test.

In an effort to advance the practice of EECx and provide a starting point to achieve exterior enclosure commissioning success, three major aspects of the process are outlined below:

**ACQUISITION OF EECX SERVICES:**
Including an EECx agent (EECxA) on the Owner’s project team can be of great benefit for a project’s success. How is
the right EECx team located? The perfect fit for one project may not be perfect for another. The EECx team should possess skills derived from technical, as well as hands-on experience, educational qualifications, and good collaborative and communication abilities. If the procurement process allows, the optimum initial step in obtaining an EECxA is the “Request For Qualifications” (RFQ). With respect to the EECxA, the RFQ should request company qualifications and internal quality assurance procedures, a list of proposed staff and their qualifications and experience, and information pertaining to past commissioned projects, including references, and a proposed approach to the specific project. To facilitate non-generic responses for the RFQ, it should include project specific information like an outline of the project’s exterior enclosure; conceptual sketches (if available) and data including size, systems and materials; and the Owner’s mission statement for the building. Most importantly, the RFQ should provide a summary scope of services. Guideline 3 offers definition of the process by outlining the tasks associated with the practice of commissioning. This can be utilized to develop a summary of the EECx scope of services, which is recommended to include at minimum:

- Owner Project Requirements Report and EECx Plan
- Construction Document Review and Report *
- Exterior Enclosure Commissioning Specification
- Shop Drawing and Submittal Reviews
- On-Site Construction Observations †
- Functional Performance Testing ‡
- Exterior Enclosure Commissioning Report

Using the aforementioned tasks as a basic summary of services, the EECx can better explain his or her approach to the Owner. Ideally, an interview process should follow the review of the RFQ submissions, wherein each EECx team can be assessed for their individual merits. Dependent upon the requirements of the procurement, the appropriate EECxA can be selected and a contract negotiated, or an invitation to submit a Request for Proposal can be prepared. If requesting costs associated with a task, the following shall be considered related to the scope outlined above:

* A minimum of three construction document reviews is recommended related to the exterior enclosure.

† A project schedule is necessary to provide information related to these services. A budget cost associated with this task may be the most appropriate method to compare field services offered by each EECxA until the actual scope and details of the exterior enclosure are defined. Note the role of EECxA is to supplement the role of the general contractor’s quality assurance and control program, and is not an inspection process. At minimum, a budget of $75,000 for nine months of periodic site visits and reports is recommended, but will vary with exterior enclosure design complexity and size, etc.

‡ A budget cost associated with functional performance tests is recommended until the actual exterior enclosure systems, complexity and testing requirements are defined. A minimum budget of $50,000 is recommended.

THE IMPORTANCE OF THE DESIGN PHASE
The Owner Project Requirements (OPR) are determined at the beginning of the design phase, thus highlighting the importance of the exterior enclosure as related to the holistic performance of the building. Most importantly, this phase provides the Owner the first objective feedback on the development of the exterior enclosure design related to its performance and OPR. The exterior enclosure design is critically examined via a series of “peer reviews” for appropriateness to the project’s function, life cycle, geographic location, durability, and performance criteria. Reviews of the exterior enclosure should begin early in the process, and continue throughout the design phase to have the greatest opportunity for positive influence. As outlined by the ICC Performance Code for Buildings and Facilities: “The peer review has the potential to enhance the quality and reliability of the design, review and construction of buildings, structures and facilities.”

As recommended above, a minimum of three reviews of the construction documents should be performed. The findings of the review should be provided in a written report along with recommendations for improvements as appropriate. Typically, the recommendations are limited to performance based issues, such as the design’s resistance to water penetration, air infiltration/exfiltration, thermal and condensation resistance, and overall continuity of detailing to meet the Owner’s expectations. The drawing review will typically encompass a comprehensive detail review in addition to hygro-thermal computer simulation as needed. A review of the specifications should also be undertaken to align the Owner’s expectations with the specified performance criteria, verify coordination with the drawings, and facilitate the development of a set of construction documents that is specific to the project being commissioned.

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1. User’s Guide for the 2006 ICC Performance Code for Buildings and Facilities, Section 103.3.6.3 Contract and Peer Review (p. 96)
Commissioning and the Energy Model

By Isaac Chambers, PE, LEED AP
& Christopher Zabaneh, LEED AP

The energy model is not just a design aid, but also a financial and legal tool as well, now that there are cash incentives for code compliance. Commissioning authorities have more responsibility than ever before with the growth of LEED® municipal policies governing more than 200 localities across 45 states as well as the upcoming CalGREEN code requiring building commissioning.

If not already, energy modeling and commissioning are becoming de-facto code. The expectation on the part of the owner and/or design team is that the commissioning authority (CxA) must verify and analyze the building’s energy usage ten months into operation, not just the functionality of the energy conservation measures. Generally, this had occurred when the same model also used in EA Credit 1: Optimize Energy Performance was compared to utility bills, and/or when EA Credit 5 attempts a Measurement & Verification (M &V) plan. While CxAs commission the building systems, there often isn’t an inclusion of the energy model in the CxA’s scope of services.

Discrepancies lie between actual energy consumption and what the LEED energy model originally predicted as required by the basic commissioning process as a pre-requisite to certification. Non-HVAC or non-commissioned items like lighting and plug loads are factored in and influence building performance.

Traditionally, by the time the CxA gets involved, the project is designed, and the authority has not had an opportunity to provide key input on the formulation of the energy model. This can be remedied through early involvement and an integrated approach with the LEED energy modeling process.

UNDERSTANDING THE LEED ENERGY MODELER’S DILEMMA

Recognizing the problematic nature of the hand off between energy modeler and CxA is the first step in remediying the dilemma. Why doesn’t the energy model match the actual energy use of a building?

The answer can be found in the difference between the ideal building as designed and the realistic/actual building as operated. Even with pre-planned occupancy schedules and professional modelers, the “idea” and “realistic” model can vary significantly.

During design, there is pressure from owners (pre-construction), architects and LEED consultants to create the most efficient building model possible. Why? LEED points, Savings by Design incentives, grants, funding, marketability and sometimes even efficiency “bragging rights.” The model’s code compliance margin is maximized to create an energy model that is technically correct, however, operationally won’t perform to the same benchmark. This is because the energy model assumes an ideal operational environment (such as consistent operation schedules, consistent routine maintenance, no future occupancy changes, etc.)

Post occupancy, there is then pressure from the owners for the CxA and/or design team to redo the model to show the actual or “realistic” model to properly optimize their systems, utility bills and some post-construction incentives. This often isn’t included in the fees and is difficult to calibrate without proper metering.

There is also the issue of different energy codes and their compliance margins, especially between LEED (ASHRAE 90.1-2004/2007 Appendix G) and Title 24 (2005/2008) in California. The Title 24-2005 and 90.1-2004 baselines are not the same, despite LEED deeming them to be roughly equivalent. This means that expectations of compliance margins and LEED points can vary. It has been one of the author’s experiences that with the exception of dormitory buildings, the baseline for 90.1 is less efficient than that of T24 and so more points can be earned. T24 models have to use fixed daytime occupancy schedules whereas the utility companies’ Savings by Design (SBD) and 90.1 can use more representative schedules. This
can make a big difference in some buildings and definitely makes predictions tougher to “commission.”

THREE POTENTIAL SOLUTIONS
The following proposed process items should be taken to better deal with the energy confirmation.

1. Commission the energy model
   Given that the commissioning authority will be around long after the design team moves on, it is prudent for the CxA to provide input on the real world operations and realistic efficiency for various systems, locations, etc. in order to ensure the model has a more realistic energy savings prediction. The LEED energy model can be submitted with the construction submittal so as to allow the CxA time to review and comment on the assumptions of the model. This can take care of the design changes made during construction that are infrequently picked up in the submitted design phase model to the USGBC.

2. Adopt a more integrated design approach
   The engineers and CxA need to form a communication channel to ensure the most accurate energy modeling will bring realistic energy savings for the project down the line. This includes resisting pressures to “idealize” the model. For every LEED project, the CxA should be a more integrated part of the team — rather than an inspector on the project — provide essential guidelines, and be brought in at project inception. For example, integrating metering equipment into the project can greatly help in calibrating the model and determining where the energy use is greater than predicted/expected. The added scope can be minimal and potentially provide additional utility savings, which is far more efficient than standard systems review that don’t focus on energy consumption.

3. Change EAc1 from a design phase credit to a post-construction credit
   LEED currently allows the energy model to be submitted well before construction, such that changes are generally not reflected in the model. It is far better to submit the model post-construction; however, LEED consultants often want to lock down a point count as early as possible. Resisting this temptation can save everyone time and money on LEED Clarifications down the line.

   Manage expectations of owners and architects from the get go, buildings change from conception to post-occupancy and the modelers can only use what is provided to them by the whole team.

LOOKING FORWARD
Though the CxA can provide or suggest the above information on a project, they aren’t always involved in the modeling process. The CxA should support the engineer’s conservative model parameters against architects, owners and LEED consultants. The ASHRAE Building EQ program currently in pilot looks to address some of the ideal vs. realistic operation issues and is worth watching closely. With the suggestions above, continued education, and some vigilance, fewer discrepancies can be achieved between the energy model and the fully commissioned building.

Isaac Chambers, PE, LEED AP is a mechanical engineer and commissioning agent for Engineering Economics Inc. in Culver City, Cal.

Christopher Zabaneh, LEED AP is an engineer, energy modeler and LEED specialist at IBE Consulting Engineers in Sherman Oaks, Cal.
Congrats to 2010 Benner Award Winner

The BCA is proud to announce that one of its past presidents, Carl Lundstrom, has won the Benner Award. Presented in memory of commissioning champion Nancy Benner, the Benner Award has been the hallmark of excellence in the commissioning industry for more than a decade. Its recipients are true leaders in the field.

The award was presented at the 18th National Conference on Building Commissioning (NCBC) in Chicago in May. The following, courtesy of NCBC, summarizes some of Carl’s many accomplishments in the commissioning industry.

“Carl has spent more than 25 years in the building industry and is currently a senior vice president at EMC Engineers, Inc., a national provider of commissioning services. He has contributed immensely to the development and growth of the commissioning industry throughout his career. Carl’s accomplishments include authoring the commissioning guideline for the State of Georgia, which was later adopted into law. In addition, Carl was instrumental in supplying best practices to a North Carolina Senate subcommittee which resulted in the state’s adoption of commissioning for all state-funded buildings greater than 20,000 sq. ft.

“A teacher at heart, Carl feels education and training are paramount to the success of the commissioning industry, and he speaks regularly for the BCA/University of Wisconsin Commissioning Course. He also acts as Chair of the BCA Professional Development Committee. Carl has taught numerous commissioning classes and seminars for the BCA, the U.S. Army Corps of Engineers and other groups.

“Perhaps those who nominated Carl sum it up best by stating that ‘…Carl has never failed to lend his time or talents to any organization or individual when it comes to furthering excellence in commissioning. He has volunteered countless hours to speaking, teaching, research, and other activities in an effort to raise the level of excellence across the spectrum of commissioning providers and with building owners. Carl prefers to remain “behind the scenes” when it comes to recognition, but anyone who has been involved with commissioning in a serious way will know Carl and his level of commitment.”

Congratulations, Carl!

“BCA Day at NCBC” continued from p. 3

The annual meeting provided members the opportunity to hear BCA President Ed Faircloth speak about what the BCA was doing to meet our mission and goals. Then each of the committee chairs: Administration, Certification, Marketing & Outreach, Professional Development & Education, and Standards, spoke about their committees, what they were working on, and volunteer opportunities.

The Learning Session was titled “Maximizing the Benefits of the Commissioning Process.” John Penney, Phil Saoud, John Villani and I presented the commissioning process from the beginning of a project through post occupancy, with the help of our panelists: William Culhane and Mathew Fahrenkrug of Culhane & Fahrenkrug, Craig McKenzie of Advocate–Good Samaritan Hospital, Joseph Buri of Advocate–Condell Medical Center, and Dan Meyers of Pepper Construction. The presentation opened dialogue amongst the presenters, panelists and audience.

Our panelists, William, Mathew, Craig and Joseph took the role of owners. Dan was our construction manager. I played the role of architect; John Penney was the engineer, while John Villani and Phil Saoud were the Cx providers.

The presentation consisted of three parts: design phase, construction phase and occupancy phase. Within the design phase, the Owner’s Project Requirements, Basis of Design, Cx specifications, Cx plan and design review were discussed. Within the design phase the parameters of the project were discussed based on a request for qualifications package issued by the owner.

The construction phase included: the construction kick-off meeting, submittals, integration of Cx activities into the schedule, Cx checklists & functional test procedures, site visits, Cx log, startups, coordination, execution & documentation functional testing, preparation of a systems manual, coordination of training for staff and preparation the Cx report. The occupancy phase of the presentation included: ongoing guidance to assist O&M staff to achieve the OPR, complete seasonal testing, document lessons learned, warranty follow-up, final report and periodic re-commissioning.

With the participation of the “owners”, “Construction manager”, “design team”, “Cx providers” and audience, the session helped answer questions found during the Cx process. The three and a half hour discussion ended with a celebration of the day at a BCA networking reception.

Thank you to our panelists, presenters, audience and our BCA Events Committee members: John Villani, Phil Saoud, Ed Faircloth, Jonathan Vaughan and Catherine Craglow.
CCP™ Updates

The BCA would like to congratulate the following individuals on achieving the Certified Commissioning Professional designation:

Daniel Brown, CCP, CEM
The Stone House Group
Bethlehem, PA

Michael C. Keith, CCP, LEED-AP
Horizon Engineering Associates, LLP
Novi, MI

Chris Deck, PE, CCP, CEM, LEED-AP
DEC Engineers
San Diego, CA

Ryan S. Lean, PE, CCP, LEED-AP
Jaros, Baum & Bolles
New York, NY

Daniel Denning, CCP
KEMA Services, Inc.
Oakland, CA

Nicholas Marcyan, CCP
Interface Engineering
Portland, OR

Steven Depew, PE, CCP, LEED-AP
Depew, Inc.
Burien, WA

Joseph Moran, CCP, QCxP
Ulteig Engineers
Minneapolis, MN

Erik Dyr, CCP, CEM, LEED-AP
KEMA Services, Inc.
Oakland, CA

Kenneth Urick, CCP, QCxP
SSRCx LLC
Nashville, TN

Michael Eardley, CCP
Cannon Design
Boston, MA

Gregory Veca, PE, CCP, LEEP-AP
DEC Engineers
San Diego, CA

M. Hassan Emamian, PE, CCP, LEED-AP
Consulting Engineering Services, Inc.
Middletown, CT

Ken Wilkoren, CCP
DEC Engineers
San Diego, CA

They join the ranks of some of the most qualified commissioning providers in the industry. Our hats off to them!

The CCP exam is now online and available at more than 200 testing sites. To apply, review the Candidate Bulletin and download the application at www.bcxa.org/certification.

Not sure if you are qualified? Send us your questions at certification@bcxa.org or call the BCA Hotline at (877) 666-2292.
5th Annual Dayton Green Expo
August 5, 2010 from 1 – 7 p.m.
This free expo held at Heapy Engineering in Dayton, Ohio will feature more than a dozen exhibitors and includes seminars on LEED EB: O&M and Cost Saving: BIM/Revit Case Studies, plus bonus seminars yet to be announced. All seminars qualify for AIA continuing education credits. See http://www.bcxa.org/events/2010-08-05-dayton-green-expo.pdf or www.heapy.com for more details.

RCx Summit
November 4, 2010
The Northeast Chapter will host the its annual RCx Summit in Northern New Jersey. Topics may include: PSE&G Energy Efficiency Economic Stimulus Initiative Market Specific Retro-Commissioning Program; Pharma RCx; Data Center RCx; and Refrigeration RCx. Additional details to be announced soon.

Commissioning for Sustained Building Performance
Sept. 17, 2010 from 8 a.m. – 4 p.m.
The Southeast Region BCA will host this conference at Heifer Village in Little Rock, Ark. Topics Include: Commissioning Legislative Activity, Sustaining Building Performance, Developments in Commissioning Best Practices, and a special training session on Commissioning 101. Additional details can be found at www.bcxa.org/southeast.

Leading the Commissioning Process: Step-by-Step Strategies for New Construction Projects
October 4-8, 2010
The University of Wisconsin, Madison, offers this five-day intensive course focusing on implementing the commissioning process, commissioning as a business, conflict resolution strategies, and more. BCA members receive a tuition discount. See http://epdweb. engr.wisc.edu/Courses/Course.lasso?myCourseChoice=L256 for a complete description and course registration.

BCA in the News
The Training Initiative, a PECI project in conjunction with the BCA, was mentioned in a San Francisco Business Times article on June 25 by Energy Reporter Lindsay Riddell. http://sanfrancisco.bizjournals.com/sanfrancisco/stories/2010/06/28/story8.html

BCA member Mark Miller was interviewed by Yale E360 for an article titled, “Energy Sleuths in Pursuit Of the Truly Green Building.” http://e360.yale.edu/content/feature.msp?id=2276

BCA Shines at AIA 2010 Convention
As part of BCA’s industry outreach initiative, we attended the AIA 2010 National Convention in Miami, Fla., and our corner booth attracted a steady buzz of traffic. Architects were interested in learning how to find qualified commissioning providers, and the booth staff talked up the resources available on the BCA website – including our Corporate Membership Directory and the ability to advertise RFPs to BCA members via email. Certification was also a hot topic, and some conventioneers stated their preference of working with CCPs on projects.

The BCA attends events like this throughout the year to spread the word about the benefits of commissioning and demonstrate how the Association can be a resource for all members of the building industry.
Chapter Highlights

NORTHEAST REGIONAL CHAPTER
On June 9 & 10 the Northeast Chapter of the BCA co-sponsored for the fourth year the Northeast Buildings Facilities and Management Show and Conference (NEBFM10) at the Boston Convention Center. John Penney and Saverio Grosso spoke at the conference on “Commissioning for LEED” and “Existing Building Commissioning.” John, Saverio and Sam Melanson met many facilities managers and potential BCA members during the two day event.

On June 16 and 17 the Northeast Chapter co-sponsored the Building sNY Conference in New York City for the second year. Saverio attended the event and promoted the BCA.

SOUTHEAST REGIONAL CHAPTER
The Southeast Region Chapter met in Atlanta on June 10 for the SERBCA Summer Meeting and Event. The meeting highlighted building envelope commissioning, including thermal envelope commissioning and exterior waterproofing commissioning, in addition to plumbing commissioning.

SOUTHWEST REGIONAL CHAPTER
Big changes are underway in the Southwest BCA chapter — it is the first to open a new chapter within an existing region! This large region including Arizona, California, Colorado, Nevada, New Mexico, Oklahoma, Texas and Utah has just become a little smaller and more tightly focused, with the unanimous approval of a Texas Provisional Chapter. The goal is for Texas to reach full BCA Chapter status by December 31, 2010.

EMC Engineers’ sustainable building solutions work to better the environment and your bottom line.
Management as Easy as 4321

By Rob de Grasse, P.E., PMP, LEDD A.P., C.E.M., CDSM, CxA

Executing good management skills often proves to be more of a dilemma in the delivery of commissioning services field than many might think. Throughout the commissioning process, a Commissioning Authority is flooded with a multitude of tasks that involve different team members who often have diverging interests within the project. Determining an effective method of management can be challenging, to say the least. Have you ever tried to boil “good management” practices down to its essence? Or, develop a rule-of-thumb or model that is easily retained and applied to drive a higher likelihood of success? I have, and found the same elements re-surface time and time again.

Regardless if you are dealing with a project Commissioning Team, an internal company program, or supporting your school’s PTA, I have found the fundamental elements to successfully steering people or an initiative to be similar. Over the years, I have developed and built upon a simple mnemonic¹ to assist me in day-to-day business and personal life: “Four-Threes down to Two-Ones” or “4-3’s 2-1’s”. What does this mnemonic stand for? Basically, there are four sets of three key words (“4-3s”) and everything boils down to the 1-on-1 interaction with people (“2-1s”).

To ease the recollection of the mnemonic, the 1st letter of the “four sets of three” is used: R² (respect, responsibility, and results), C³ (communication, consensus, and commitment), V³ (visual, vocal, and verbal), and OSP (optimize, structure, and perspective).

You may recognize some of the “sets of three”. In 1969, Dr. Albert Mehradian conducted extensive research about one-on-one communication and determined that it comprised of a three part process: visual, vocal and verbal. Dr. Mehradian concluded that communication of a message is 55 percent visual², 38 percent vocal³, and only 7 percent verbal⁴; thus, the V³. Later research established that voice-only messages are 84 percent vocal and 16 percent verbal. Counter-intuitive, isn’t it?!

Many sources, Getting to Yes: Negotiating Agreement Without Giving In (Roger Fisher, William L. Ury), The Seven Habits of Highly Effective People (Dr. Stephen R. Covey) Essential Managers: Negotiating Skills (Tim Hindle), and A Guide to the Project Management Body of Knowledge: PMBOK Guide (Project Management Institute), to name just a few, illustrate three primary steps to success. I have fused the various concepts: first, effective communication of the issues/expectations; second, arriving at a consensus; and the ultimate third, commitment to the agreed upon consensus; thus, the C³.

Numerous readings on corporate and interpersonal psychology led me to the R³. First, respect the person regardless of personal feelings or the situation; second, respect their responsibilities and what they are charged with achieving (even if you do not agree with their assignment or capabilities); and third, strive for the always present need for results; thus, the R³.

1. mnemonic [ni mō nɪk] noun (plural mnemonics), memory aid: a short rhyme, phrase, or other mental technique for making information easier to memorize.
2. Visual: body language (facial expressions, mannerisms, appearance, actions).
3. Vocal: tone, tenor, pitch and timbre of your voice; not what you say, how you say it.
4. Verbal: the words you choose to use.

“Respectful communication builds trust…Respectful communication takes constant attention and inner self-discipline. If you have the ability to communicate your disagreement with respect, you are more likely to be openly assertive about your boundaries and limits.”

—Susan M. Campbell, PhD
I have always tackled projects and programs from a quality system approach (continuous improvement: ISO, Six Sigma, LEAN, GMPc, TQM, etc.). The challenge with integrating continuous improvement into the mnemonic was, how are all of these elaborate quality systems boiled into a simple, easily remembered, group of three words that are easily applied and embody the core steps of continuous improvement? First, **optimize** the tasks and activities in the current structure; second, if optimization is hard to achieve, consider changes to the **structure** to continue optimization; and third, always keep the end game in mind — that being the **perspective** of your customer/client.

Finally, and typically most critical to success, is the one-on-one interaction with the team members, stakeholders and others that can have a direct or indirect influence on the outcomes; thus, the **2-1’s**.

Being an extremely visual person, I adapted a hierarchy diagram to allow the visualization of the mnemonic model.

Good management skills must be anchored by good communication, where you must concentrate on the perception of the receiver, rather than solely on the details of the service/project in order to get your point across. Since the customer’s perception is more essential, focusing on this simplifies the decision process in the customer’s mind, making for a better business relationship and typically the best results.

This mnemonic model has been immensely helpful throughout my career, guiding decisions and choices — especially when faced with quick decisions, choices during tense interactions, and other situations when decisiveness was necessary. Next time you’re in search for an effective management guide, try using the 4 3’s, 2 1’s approach in order to position yourself to succeed by thinking in reverse.

Rob de Grasse is the President of RD3, a commissioning and facilities management services company focused on the optimization of facilities operations. Rob has 28 years in the facilities management / construction industry and has been involved in the management and delivery of commissioning services for 12 years.

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www.RD3inc.com
The peer reviewer should possess unique expertise in the exterior enclosure. Although the Architect of Record (AOR) is the responsible party for the construction documents, he is encouraged to assess the technical information provided by the EECx peer review, and incorporate to the extent he sees fit, the recommendations to enhance performance. In the spirit of collaboration, reviews and meetings with the project team to discuss the construction documents are a part of the process. This minimizes the risk of proceeding into construction with a design that fails to meet the OPR. Without a comprehensive design peer review, testing of the exterior enclosure may serve only to validate the shortcomings of the design, at significant cost to correct the shortcomings and associated delay in schedule.

EXTERIOR ENCLOSURE COMMISSIONING SPECIFICATIONS

The design phase concludes with the development of the EECx specification section for inclusion in the project manual. The specification section is authored by the EECxA and outlines the roles and responsibilities of each project team member; the construction phase commissioning process; and, ideally, should include an outline schedule of functional performance tests. Any testing indicated should clearly and unambiguously state project specific test standards, methods and modifications, testing pressures, and pass/fail criteria.

It is important to include the EECx specification section in the bid documents to allow the general contractor and exterior enclosure subcontractors to understand the obligations for their scopes of work as related to the commission-
ing of the exterior enclosure. Due to the current lack of clarity regarding the process, many bidders may be confused by EECx. This can result in items, such as field testing (which is traditionally outlined in generic, commercially available specifications to be performed by the contractor), being erroneously included in the bid. All testing, when performed under the context of EECx, is recommended to be conducted by the EECxA on behalf of the Owner. Specifications that indicate testing agencies to be retained by the contractor who placed the work to be tested have long been questioned by Owners.

The EECx specification section provides a clear end to the design phase and an introduction to the construction phase. By this point in time, the extent of services necessary over the course of construction can be determined, including scope of construction observation, extent of tests, and requirements of the occupancy phase. Refined pricing by the EECxA can be provided to the Owner only through a clear understanding of the project’s complexity, the Owner’s Project Requirements, and the Owner’s risk tolerance; and by collaboration and communication during the design phase.

The process that leads to “Issued for Construction” documents has the capacity to significantly influence the ensuing EECx construction phase tasks. To gain best results:

1. Pursue a commissioning process based on Guideline 3 in combination with an experienced EECxA. Develop a project-specific commissioning plan that shall meet a budget, while not compromising the quality objectives of the Owner. Find the best EECxA for your project through a qualifications based search, not a search centered on cost.

2. Focus on the Owner’s occupancy requirements, not only on achieving performance intent during the design and construction phases. The EECxA will perform specialized exterior enclosure design reviews to enhance the quality of the exterior enclosure during construction and to achieve a long term durable and sustainable exterior enclosure.

3. Develop an EECx specification section tailored specifically to the project that provides guidance to all the parties throughout the construction process. Effective communication starts with a clear outline of roles and responsibilities. The EECx specification section is the path to success during the construction phase.

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