FMI Quarterly
2005 ISSUE 3

RAINMAKING

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 Published since 2003 by FMI Corporation, 5171 Glenwood Ave., Raleigh, North Carolina, 27612. Printed in the United States of America.

FEATURES

This Quarter:
A Focus on Rainmaking

Dear Reader:

Rain is the friend of farmers and sometimes the foe of those in the construction industry. So why have we focused this issue on Rainmaking? Professional services firms have used the term for years to connote business development. The great rainmakers are those who bring work to the firm. Rainmaking is not only serious business; it is the backbone of business. Making rain is the business of every business leader, whether contractor, design professional, manufacturer, or supplier.

In this issue, we bring you some experiences and tools for your rainmaking efforts. Our own Randy Giggard discusses the potential profit in conducting good research. This research, he says, can be used to set business development and marketing plans. Business development opportunities for the healthcare market are explored by Mark Bridgers. His article describes four potential future scenarios based on researched trends in this market. In terms of business-development personnel, the project superintendent or “salesmantendent” has the greatest ability to impact the project, says FMI’s Gregg Schoppman. He reveals the emerging role of project superintendents.

In *The Journey to an Envisioned Future*, Colonel Arthur J. Athens teams up with FMI’s Tim Spiker to share how an organization can use an envisioned future to create direction and energy for the organization.

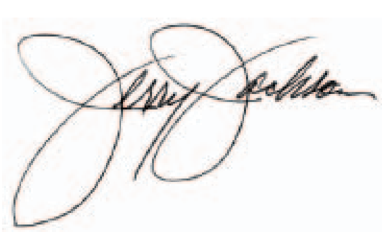
We have also included a roundtable discussion of program management. Dennis Doran describes how public and private owners as well as architects, contractors, program managers, and consultants have used this new concept. In another team effort, Ken Roper and I collaborated on an article describing how a focus on people, roles and responsibilities, resources, reward systems, and measurement systems will ensure your strategic plans gain traction.

From our mergers and acquisitions group, Steve Darnell illustrates the various integration philosophies, using key acquisitions in the engineering and construction industry as examples. Ralph James demonstrates a behavioral approach to construction productivity. Finally, three members of our leadership group — Jake Appelman, Dan Wooldridge, and Tim Spiker — highlight the potential organizational danger of employee burnout and how you can spot it and avoid it.

In addition to these features, we provide shorter articles in four of our departments.

Here's hoping that your crops and gardens get the rain that is wet and that your backlog is refreshed by the rainmaking that is green.

Sincerely,



Jerry Jackson
FMI Quarterly Publisher and Senior Editor

FMI's Hugh Rice is Honored with Golden Beaver Award

My colleague, Hugh Rice, was recently designated as a recipient of the Golden Beaver Award. Hugh has been my business partner and an active member of the construction community for 32 years. In my role as publisher and senior editor of *FMI Quarterly*, I would like to acknowledge his achievement. We do not normally use this publication as a vehicle for patting ourselves on the back, but this is the industry's acknowledgement of significant contributions made by one of its members who is also a key leader in FMI's growth and development.

The Beavers is a social, honorary organization made up of contractors engaging in heavy engineering construction. The Golden Beaver Award recognizes men and women for their achievements and contributions to the heavy construction industry in the categories of Management; Supervision; Engineering; and Service and Supply.

Five worthy individuals were presented Golden Beaver Awards at the 50th Annual Awards Dinner held Friday, January 21, 2005, at the Century Plaza Hotel in Los Angeles. More than 2,100 members and guests attended the black-tie event where Former Oklahoma Congressman J. C. Watts was the guest speaker.

As chairman of FMI, Hugh received the Service and Supply Award for

Golden Beaver award winners (l-r) John Shimmick, Management Award; Hugh Rice, Service and Supply Award; Keith Jacobson, Supervision Award; David Nash, Special Award; and Robert Nichol, Engineering Award.

PHOTO COURTESY OF THE BEAVERS INC.

his leadership with FMI, making it one of the industry's most prominent construction consulting firms as well as his formation of FMI's Mergers and Acquisitions Group, which has completed more than 450 transactions.

John C. Shimmick, chairman of Shimmick Construction Company Inc., Hayward, Calif., received the Management Award. Keith Jacobson, vice president of operations of Massman Construction Co., Kansas City, Mo., received the Supervision Award. Robert D. Nichol, P.E., president and CEO of Moffat & Nichol Engineers, Long Beach, Calif., received the Engineering Award. Rear Admiral David J. Nash, U. S. Navy (Retired) who recently joined BE&K Inc. of Birmingham, Ala., received a Special Award for his 14 months of challenging service running the infrastructure reconstruction efforts in Iraq.


PHOTO COURTESY OF THE BEAVERS INC.

Beavers officers (l-r) Alan L. Landes, Vice President; Ralph G. Larison, Senior Vice President; Patrick B. Kenny, President; and James D. Waltze, Secretary-Treasurer.

The following comments are what a few of Hugh's friends and colleagues had to say about him and his service to the industry:

"Hugh's prominent position among construction-industry leaders reflects his many personal strengths. He is simply smarter, more diligent, more persistent, and more resourceful than many other highly successful professionals in this business.

It's unique to work with a resource who clearly understands the big picture on critical issues, and that can also devour the details. With Hugh Rice, clients get it all in one package. FMI associates get a role model of extraordinary competence in serving the construction industry.

His creativity in designing alternative capital structure options for his clients exceeds their expectations. He knows how thousands of previous construction industry transactions have been crafted, and he uses that knowledge to improve on future designs. Add personal relationships with a vast number of industry leaders, and you have an advisor with superior insight and all of the right contacts."

— ***Chip Andrews, Chairman, FMI Corporation***

Hugh's prominent position among construction-industry leaders reflects his many personal strengths.

— CHIP ANDREWS

"I want to congratulate Hugh for his recent designation as a recipient of the Golden Beaver Award. I have had the opportunity to work with Hugh in many settings over the past several years. We have served together on the outside advisory board of a construction company and given educational programs together nationally. Hugh has conducted training programs for the employees of Sundt and has also served on Sundt's outside advisory board.

Hugh is extremely knowledgeable on all aspects of construction and has dedicated himself to raising the bar and making construction a much better industry. Those of us in construction owe him a great deal of gratitude. I personally have the utmost respect for his knowledge and dedication. He has been helpful to me in the development of my career and in helping me make Sundt a better company. I am proud to consider Hugh Rice a good friend.

Congratulations Hugh on receiving this well-deserved award."
— ***Doug Pruitt, Chairman, Sundt Construction Inc.***

"I first met Hugh Rice in 1979 when I was 23 years old and had just started working at Beers Construction. My father had met Hugh at an AGC meeting and invited him to come discuss succession planning at the company. From that initial meeting, Hugh became my primary strategic advisor and thought partner outside our company. Until I left the industry in 1998, he advised me on strategic plans, diversifications, acquisitions, reorganizations, as well as the sale of our business. Hugh brought tremendous knowledge and insights of the industry that were an essential component of the success we enjoyed. Hugh combines an incredible intellect with thorough strategic and practical knowledge of the industry. In addition to his professional abilities, Hugh is a fabulous person of the highest integrity. He has contributed his time and talents to many community and civic causes in order to help those who are less fortunate. I feel extremely fortunate to call Hugh my friend."
— ***Larry Gellerstedt, Chairman and CEO, The Gellerstedt Group***

"It is great that Hugh is a Golden Beaver recipient. He has made a tremendous difference in the construction industry. He has helped Ivey Mechanical so many times through the years. His advice has been extremely valuable to us. Hugh is a top-notch individual, and I am pleased that others feel the same way."
— ***J. Marlin Ivey, Chairman, Ivey Mechanical Company Inc.***

He has contributed his time and talents to many community and civic causes in order to help those who are less fortunate. I feel extremely fortunate to call Hugh my friend.

— LARRY GELLERSTEDT

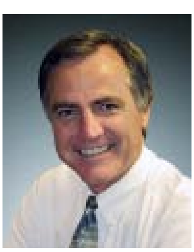
"Hugh Rice has done more than anyone I know to get contractors to understand the importance of making a reasonable profit. Not just bidding work to grow revenues but concentrating on the bottom line. Hugh has also done more than anyone else in the construction industry to help privately owned companies think about succession plans. Hugh worked with us 20 years ago to install our first stock-option program. Hugh was not a CEO of a major construction company but has helped more construction companies than anyone I know in giving sound advice on managing a company.

The biggest thing for me has been to have someone that I respected in the construction industry to run ideas by. I especially feel that he has helped me in succession issues regarding how to get stock in the hands of our key people.

I don't have any facts on this, but I would bet that there are a lot of contractors that wouldn't be in business today if it weren't for Hugh's advice. I believe Hugh has had a lot to do with making the industry a much more professional industry. In this way he has probably contributed more to the industry than most large contractors."
— ***Ron McKenzie, CEO, TIC Holdings Inc.***

I believe Hugh has had a lot to do with making the industry a much more professional industry today. In this way he has probably contributed more to the industry than most large contractors.

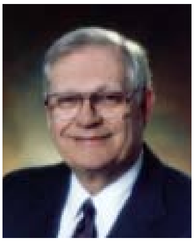
— RON MCKENZIE



"During a recent conversation with Hugh on the importance of good hiring practices, he stated one of his axioms of wisdom, "Don't try and teach a pig to sing. Not only does it frustrate the teacher, but it pisses off the pig." While I found the quote quite funny, it also illustrated the impact hiring the wrong person has on the whole organization. Sound guidance in any business — even construction!

At times we in construction consider our world so unique — so masked in mystery — that we follow another set of rules unheard of in other industries. While construction, like any other industry has some unique characteristics, the fundamentals of sound business practices still apply. Hugh's impact on construction has been the ability to clearly apply those fundamentals within the unique framework of construction.

Hugh's insights about our industry go well beyond the analysis of risk and conservative oversight of many consultants and enter the realm of entrepreneurial thought, opportunity, and yes...profits. As a member of the Rosendin Electric board of director's for the past several years, his input has been invaluable and has played a significant role in our growth as a leader in our industry."
— ***Tom K Sorley, President/CEO, Rosendin Electric Inc.***



"Recently, the Beavers honored Hugh Rice with a Golden Beaver Award. This is a distinction and honor that is reserved for a very few outstanding individuals in our industry. The honor goes to those individuals who have provided outstanding service to the industry and whose accomplishments have helped improve the construction and engineering business.

Hugh Rice is certainly well-deserving of the award and stands out as an individual who is well-known to many corporations and individuals who make their living in either engineering or construction.

Hugh has provided guidance, counsel, and advice to a whole host of companies and CEOs that have benefited from both his expertise and wisdom.

While Hugh is not a contractor, we who are, frequently ask for his guidance on everything from acquisitions to organizational structure to strategic planning.

We at BE&K have found that he knows the industry as well as or better than anyone else we come in contact with. We feel comfortable in exposing the inner-workings of our business to him (warts and all) because of his integrity and his determination to never reveal a client's confidential information.

If I need to know what is going on in the industry in general or in a specific segment of the industry, Hugh Rice is the first name that comes to my mind.

It has been a privilege and honor to know and work with Hugh over many years. His contributions to our industry have made it better."
— ***Ted C. Kennedy, BE&K Inc., Founder***

Hugh has provided guidance, counsel, and advice to a whole host of companies and CEOs that have benefited from both his expertise and wisdom.

— TED C. KENNEDY

"We would all do well to listen to Hugh Rice. He is a valuable asset to the construction industry. Congratulations Hugh! You deserve to win this prestigious award."
— ***Stuart Graham, CEO, Skanska AB***

"I have known Hugh for more than five years now, both as a trusted partner and as a worthy competitor, and I continue to be amazed at the wealth of knowledge he has amassed during his tenure in the construction industry. As one of the few banks in the country that actively pursues lending to the construction industry, we have interacted with Hugh on several occasions and have come to rely on his impressions of various potential clients as a trusted, impartial viewpoint that rarely steers us in an adverse direction. Hugh's importance to his clients is

readily apparent, as is their level of trust in his judgment. On a personal level, I have truly enjoyed working with Hugh over the years and am very appreciative for his willingness to give his advice and opinions in any situation. Hugh, you are a very worthy recipient of the Golden Beaver Award, and I wish you all the best going forward."
— ***Shahrokh Shah, Managing Director, Harris Nesbitt, Construction Industry Group***

It would be easy to fill pages with commentary like this, but you get the point. Hugh is a fine fellow who has earned the respect of his peers...many peers. For his business life well lived, he has earned this honor.

Thank you for the reflection on all of us at FMI, Hugh. We look forward to many more years of what entitled you to this award.

Jerry Jackson
Chairman, FMI
Publisher and Senior Editor
FMI Quarterly

Roundtable Discussion: Program Management

Meeting at Marriott Headquarters in Bethesda, Md., on November 18–19, 2004, representatives from 20 different public and private owners and architects, contractors, program managers, and consultants gathered to discuss a new concept at the heart of a quiet revolution. According to the invitation, the topic of the meeting was Rotation: The Process of Extracting Practices From the Confines of a Single Project and Looking at Those Practices in the Context of a Program. Some of the underlying benefits promised in the rotation concept include improvements in construction efficiency, reduced process errors, economies of scale, and continuous improvement as well as design consistency and enhanced brand identity. The companies and organizations currently practicing rotation concepts are the serial builders working along program management lines.

Rotation: A Roundtable Discussion of Program Management

By Dennis Doran

Serial builders, sometimes referred to as "constant builders," have ongoing building programs. Their individual projects taken together make up a building program. Serial builders are often the largest owners in the world from all markets, governments, and institutions. At the core of the rotation concept is the idea that owners with an ongoing list of projects should migrate their thinking about individual projects to thinking about building programs. According to Jan Tuchman, Editor-in-Chief of *Engineering News-Record*, the rotation concept was "invented by an architect. It's a visual concept." Her observations were correct, and it was the task of those assembled for the Rotation Roundtable to take that visualization and adapt it to real building programs.

The concept for rotation originated with Chuck Thomsen, chairman of 3D/I. "We were looking at how we could deliver better results to our clients, and how we might change the profession." Thomsen's team compared the potential for rotation in the construction industry to the leaps made in the industrial revolution when automobile manufacturers discovered the assembly line. [For a visual explanation of the rotation concept, see Exhibits 1–4 in this article.] Initially, Thomsen discussed the idea with Bill Hoy, senior vice president of design and project management for Marriott International, who thought it would be a great idea to assemble a cross section of owners, architects, contractors, suppliers, and educators to discuss the concept. The author served as moderator for the sessions. Representatives from each company made brief presentations on their current building programs and discussed how rotation concepts apply to their organization. Presentations were followed by lively group discussions.

At the core of the rotation concept is the idea that owners with an ongoing list of projects should migrate their thinking about individual projects to thinking about building programs.

What was the goal of the Rotation Roundtable? If the goal was to define or refine the concept of rotation in program management, then progress was made. However, like most creative discussions, the process of definition and refinement opened up the topic and questioned both its meaning and use in a variety of construction programs.

At the outset of the formal presentations, Tom Regan, dean of the College of Architecture for Texas A&M, discussed how the school uses the rotation concept

The list of companies and organizations represented at the Rotation Roundtable meeting included many well-known organizations:

Owners
Los Angeles Unified School District
Marriott International Inc.
Minnesota State Colleges and Universities
Rice University
Target Corporation
U.S. Air Force
University of Texas

Architectural Firms and Program Managers
3D/I
Brookwood Group
BSW International
DMJM
NIBS
The Stubbins Associates

University Architectural Design Schools
Harvard Graduate School of Design
Texas A&M University

Suppliers
Johns Manville
Trane Global Business Development

Contractors
Herman Stewart Construction
Jacobs Facilities Inc.

Consultants
FMI—Dennis Doran, Moderator

Press
Engineering News-Record

for research programs and not building programs. Regan discussed how the three departments (architecture; landscape architecture and urban planning; and construction science) that make up the College of Architecture at Texas A&M all operated independently with separate research arms. Texas A&M combined all three research departments into a single department supporting the School of Architecture. The result was a reduction in areas of duplication and coordination as well as a transformation that paved the way for a new area of study in architectural research. A similar rotation process was used to create a multidisciplinary design studio where students can exchange ideas and work with their counterparts in other disciplines to design and build more successful projects. Rotation at Texas A&M has become more than an exercise in economies of scale; it has introduced a new dimension of collaboration into the research and design process.

In the past several years of surveying owners, FMI in partnership with CMAA, has found that owners consistently rank collaboration and communication among the most critical factors needing improvement in order to build more successful projects. Texas A&M's approach to multi-disciplinary and interdisciplinary research and project teams is preparing a new generation of designers and teachers that will revolutionize the built environment.

George Heery, chairman and CEO of Brookwood Program Management, was one of the original thinkers and planners for both the concepts of construction management and program management. He separated the owners that would take advantage of rotation into two groups:

1. Owners who, in the procurement of design and construction, can often rely upon relationships.

2. Owners who should not take the risk of relying upon relationships in the procurement of design and construction.

According to Heery, "If you're Hines, Wal-Mart, or Marriott and regularly in the market, awarding contracts on a single-source basis, then you can rely upon relationships to get the best performance and market prices. A good example is the college trustee who observes problems with design and construction, and says, 'Why don't we do it this way?' But, a single-source supplier would not be tolerated." Some owners are constrained by laws and culture and must use a low-bid procurement method. Those who are not so constrained still require internal resources with the experience and relationships to get the best value for their building programs. That fiduciary relationship may also exist outside of the organization such as with an architect, construction manager, or program manager; however, those who are not serial builders, or those who have difficulty organizing multiple projects into a program are still better off relying on competition in the market.

For owners who can prudently rely upon relationships, the development of rotation will probably be faster and more sophisticated, with technology playing a major role.

In the future, according to Heery, "For owners who can prudently rely upon relationships, the development of rotation will probably be faster and more sophisticated, with technology playing a major role."

For attendees at the table struggling with the concept of rotation and the question of who bears the risk and responsibility for programs, Target Corporation's Rich Varda, vice president for store planning and design, architecture, and engineering, presented a model approach for the concept. Target, with a $3.5 billion annual capital-spending program, opens 100 new stores and undertakes 80 remodels annually. It clearly fits the definition of a serial builder, and it is an ideal candidate for rotation concepts. In effect, it is a rotation proving ground. Target's in-house design and construction team executes 40% of their own stores. With 230 people on their design staff and another 325 employees working as outside A/E consultants, Target, according to Varga, has excellent control over costs. They have not exceeded their overall budget or missed an opening date in the last 10 years.

At the heart of Target's massive construction program are three prototype designs that, along with variations adjusted to suit certain sites, are periodically tweaked and updated to incorporate new ideas and changes. Target uses a mix of delivery systems and bidding methods in order to attract and choose the best consultants and contractors. Though they limit the number of architectural firms they work with to four, they have general contractor partners nationwide, and bid out subcontractor work using a reverse-auction approach. They take electronically sealed bids from pre-qualified contractors, but don't necessarily

Since 2001, there have been 65 new schools built, 55,000 new school seats delivered, and 10,000 modernization projects completed in the LAUSD.

take the lowest bid. They negotiate fees with general contractors.

Some of the biggest problems with their program, according to Varda, include the challenges of unique projects. For instance, more stores are going into urban settings where prototypes would never fit, and the need to incorporate new prototype changes into all of the stores across their program provides some special challenges. They also face the typical problems that most programs face: balancing construction cycles/ workload and uncontrollable schedule impacts from adverse weather and uncooperative building code officials.

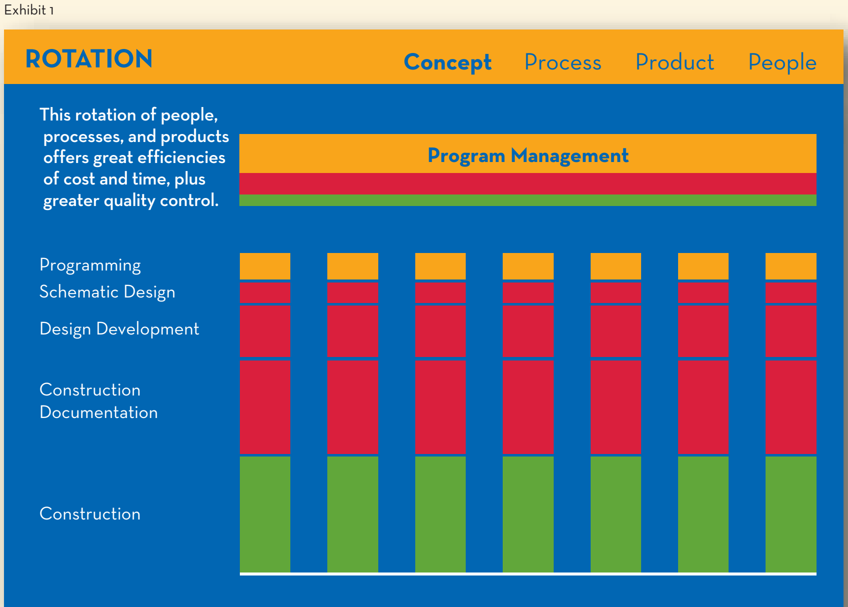
The Los Angeles Unified School District might be thought of as one of the institutions described by George Heery as too limited by legal constraints and cultural concerns to take advantage of the potential benefits of rotation. However, under the leadership of Jim McConnell, chief facilities executive for LAUSD, the LAUSD is taking advantage of all the economies of scale available by creating a construction program using rotation concepts. With a budget of $15.5 billion, LAUSD's building plans eclipse Target's. The second largest school district in the country has 750,000 students on 800 existing campuses with 12,000 buildings. The combined size of the LAUSD campuses and enrollment is larger than that of most U.S. cities. The current program includes 163 new schools and 16,500 modernization projects.

Since 2001, there have been 65 new schools built, 55,000 new school seats delivered, and 10,000 modernization projects completed in the LAUSD. In a state with a nationally publicized budget crisis, overcrowded schools, and a system that buses 16,000 students daily, dealing with the multiplicity of needs from teachers, students, parents, school board members, community, and state and federal governments, McConnell can only dream of having the level of control that a large corporation like Target has. Nonetheless, he has worked to get more school projects "rotated" under an internal system of controls. For instance, LAUSD has hired a new professional team to manage its building program, and they have worked to update industry standards for policies and procedures as well as construction and maintenance systems. They are also tackling the collaboration aspect by improving relationships and making partnerships with various state agencies as well as with contractors. Until recently, problems in the past made it difficult to get contractors to even bid on projects.

While every school in the LA district is unique, McConnell says they have been able to standardize interior designs somewhat. They have also started a small-business boot camp to help increase participation from local community contractors and labor. McConnell says they still face many challenges to get the most out of their construction program, such as maintaining and strengthening political support and dealing with the constant pressures on bond funds. There are also some challenges more unique to metropolitan school systems, for instance, finding enough available land for new schools amid some of the most expensive and crowded real estate in the country. LAUSD is currently looking for 200 acres for new schools. The best case scenario, McConnell says, would be to "go with relationships, and build the same prototype over and over again."

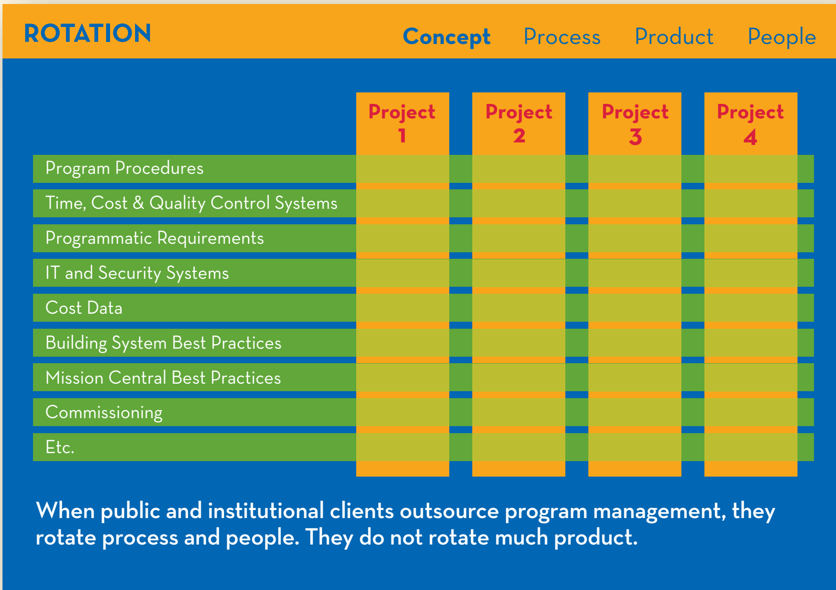
While LAUSD may have difficulty obtaining new sites for construction, try getting an airstrip approved near the coast in North Carolina, building an airbase in an undisclosed location in the Middle East, or privatizing 60% of all housing for the U.S. Air Force. Those are some of the construction challenges faced by Major General Dean Fox of the United States Air Force. Although the Air Force construction program is only a fraction of the LAUSD budget at $1.5 to $2 billion, there are plenty of challenges. According to Fox, "The Air Force believes strongly in architectural compatibility with the local community. All over the world, we use design standards that we can site adapt." Major General Fox says they are increasingly seeking to adopt program ideas compatible with rotation. Someone once told Fox, "The Air Force wants Wal-Mart prices, Kodak quality, and FedEx speed." Toward that end, the Air Force is using design-build-plus type contracts and realizing reduced timelines for buildings. They are also establishing more relationships with general contractors, especially those with fast-track capabilities. Major General Fox is still looking to streamline the system in order to improve their success rate for meeting timelines, in part by increasing the use of design build.

Exhibit 1



Source: Chuck Thomsen, Chairman of 3D/I, and the slide show created by Miriam Swift, Jim Avant, and Jesse Wells, of the 3D/I R&D team.

Exhibit 2



Source: Chuck Thomsen, Chairman of 3D/I, and the slide show created by Miriam Swift, Jim Avant, and Jesse Wells, of the 3D/I R&D team.

Hugh Rice, FMI chairman, and Mark Napier, consultant for FMI's owner services, introduced FMI's work with owners, architects and engineers, contractors, and allied industry suppliers and spoke on the importance of collaboration and true alliance relationships. Presenting a specific case using rotation concepts, Mark Napier outlined some of the benefits realized in a program undertaken for BP by Bovis Lend Lease. The BP re-imaging project created a true alliance program employing a collaborative program management system by all stakeholders that increased transparency and eliminated claims. The use of advanced procurement techniques (including reverse auctions) rewarded innovation and saved 40% in procurement costs. The use of a logistics company saved 30% in material delivery cost to each site. Technology at the heart of this program included ConstructWare's collaboration software. Along with the assistance of a nationwide logistics provider, Global Alliance, the program approach reduced the complexity of managing thousands of individual projects to a centralized management approach. Napier said that a conservative estimate of time saved on the overall

The use of advanced procurement techniques (including reverse auctions) rewarded innovation and saved 40% in procurement costs.

program was 92,958 hours. The high degree of planning and control in the program made it possible to make the changes to BP's service stations without shutting down and instilled accountability to everyone involved. According to Napier, the degree of collaboration between contractors and suppliers was so high that it was as if they were all working for the same company.

The host for the Rotation Roundtable, Bill Hoy, senior vice president of design and project management for Marriott International, oversees construction for about 120 new properties per year plus 300 to 400 renovations. Marriott often uses a prototype approach along the lines of Target's program and gets further economies by taking advantage of Marriott's buying power to do in-house procurement. While they define scope requirements for all brands and renovation cycles along with budgeted costs, they have not standardized to any single delivery method. Instead, they let the needs of the individual project dictate the delivery method. Thus, Marriott likely will find more opportunities to employ innovative rotation concepts in its building program, while, at the same time, allowing for the unique circumstances of each project and venue.

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Rice University is a small university with a big reputation and a distinctive, tree-lined campus, often described as Byzantine/Romanesque, that serves as an oasis in the midst of Houston, Texas. Barbara White-Bryson, associate vice president of facilities engineering and planning for Rice University, has the unique problem of balancing the design and construction of signature buildings with the need to increase standardization in order to leverage purchasing economies of scale. Rather than having a prototype, Rice has Lovett Hall, one of the original buildings on campus that serves as the "palette and DNA model for newer designs."

Though new buildings are only added periodically on the 280-acre campus, they have a sizeable ongoing maintenance program of $50 million in major maintenance and $60 million in deferred maintenance. Each building is unique, according to White-Bryson, and the process is quite regimented. They have 250 people on their facilities staff including project managers who "own" their projects. The internal project managers' expertise is leveraged with the help of external project managers as needed. Though White-Bryson finds little parallel with public companies like Target when it comes to employing rotation concepts, Rice nonetheless is taking advantage of construction-program thinking by standardizing project management and training and incorporating the standards throughout the culture of the facilities engineering and planning organization. They have also standardized budget/cost development models and reporting systems.

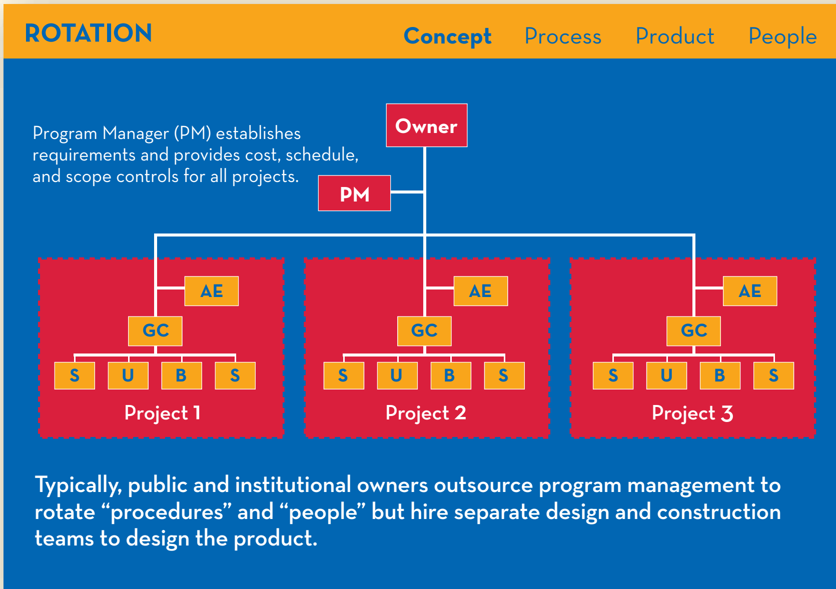
Standardizing as many processes and procedures as possible has put Rice on track for creating an overall "rotated" program; however, White-Bryson sees many challenges ahead and adds sustainability standards and the use of a collaborative web site to her future goals.

The discussion of the use and benefits of rotation concepts at Rice University brought up many questions and challenges, especially where a building program consists of only the occasional unique project rather than ongoing prototype building projects. Chief among those questions was: How does the head of a building program measure the success of rotation? Also, according to White-Bryson, "What is going to be the profound change that makes our industry different in the next century? One big issue is the disconnect between design and construction. For example, we often make discoveries too late in the shop drawings. How do we clearly integrate design and construction?" The assembled group did not resolve these questions, but many suggestions were made. An overriding idea was to "collapse the process" in order to reduce the risks born by the owner. According to one participant, that is now done by using a developer, which adds 5% to 10% to the overall project cost. Several others offered ideas that would bring suppliers and subcontractors to the table in the design phase. According to Hugh Rice, "If there is to be profound change in the industry, it will happen only if it is driven by the owners."

The discussion of the use and benefits of rotation concepts at Rice University brought up many questions and challenges, especially where a building program consists of only the occasional unique project rather than ongoing prototype building projects.

Ray Landy, president of DMJM, noted that his company is taking the risk with some clients, but that this agreement type is not without problems. "It works only where we have strong relationships with the client," Landy said. DMJM, whose parent company is AECOM, has a growing program management business with some high-profile clients, including the Pentagon renovation project. Landy noted that when projects are moved to programs, 10% to 20% of the project investment is in design and construction while 80% to 90% is in facilities management and operations and maintenance. DMJM is working hard to "collapse the process" for its clients, and technology is playing a

Exhibit 3



Source: Chuck Thomsen, Chairman of 3D/I, and the slide show created by Miriam Swift, Jim Avant, and Jesse Wells, of the 3D/I R&D team.

large part in their efforts to gain efficiencies by reducing waste on projects. Key to those technologies is the use of object-based CAD and Building Information Modeling (BIM). The use of BIM increases constructability and reduces claims and cost constraints by integrating the construction process into one model for analysis. Some of the hurdles to overcome before the use of BIM becomes universal are the long incubation period, the legal risks for A/Es, and the multiple software programs in use. However, Landy notes that they are going to use BIM "along the entire food chain for the $9 billion LAX program." BIM is an example of revolutionary change that is at the heart of rotation. It is highly integrative of the various aspects of construction projects.

BIM is an example of revolutionary change that is at the heart of rotation. It is highly integrative of the various aspects of construction projects.

At the Rotation Roundtable, it was often said that contractors and subcontractors need to be involved earlier in the project. That same idea was cited often in the results of the FMI/CMAA Survey of Owners. Scott Simpson, president and CEO of Stubbins Associates, noted that they are doing this now with a project delivery method they call Hypertrack©. The process eliminates the shop-drawing phase by simultaneously designing and making project decisions for constructability. The process requires the architect, engineer, owners, and contractors to be at the table as part of the design team, thus taking fast-track construction to a new level. Average savings for Stubbins Associates' clients using Hypertrack© have been $18/SF, 6.8% of construction cost, and a 33% acceleration in schedule. Simpson says that the key to their radical project delivery method is that they "don't have to think backwards. They start with the outcomes."

One of the major concerns on construction projects, especially for architects, is liability. Simpson said that they have reduced liability greatly because they make decisions as a team. Another seemingly radical approach is that Stubbins contracts for subs using a gross maximum price (GMP), essentially employing a time-and-materials approach, a revelation that caused a few eyebrows to rise around the table. However, Simpson reported that they have continuous cost and schedule control, and the job moves faster, with fewer delays since the subs are involved in the shop-drawing process at the start of the job. This high degree of risk sharing and collaboration is built into the process. The key to making it all work is establishing an esprit de corps and having the principle decision makers at the table for every meeting. According to Simpson, this approach greatly changes the role of the architect, "We are leaders, and design is our medium." Stubbins is also increasing the use of technology to give owners more access to information needed to make informed decisions. They use three- and four-dimensional visualization to help increase quality and save time and money.

At the University of Texas, Sid Sanders, assistant vice chancellor for facilities planning and construction, faces many of the same challenges as Rice University, except on a much larger scale. Covering 60 million square feet of facilities, with an $8.5 billion annual operating budget for nine academic institutions and six healthcare facilities, Sanders' staff oversees 181 active projects. Providing oversight for program management through delivery, Sanders' team acts as consultants with 15 project managers assigned to 15 diverse clients represented by each institution.

One of the major concerns on construction projects, especially for architects, is liability. Simpson said that they have reduced liability greatly because they make decisions as a team.

Sanders said that it is difficult for UT to employ all the principles behind the rotation concept, due primarily to the restrictive regulatory process required by the state and university. However, they have made much progress by rotating all the process controls and procedures. With aspects of each project centralized around the Office of Facilities Planning and Construction project managers, they have made great strides in creating standards for information integration and contract guidelines. The UT approach assures that lessons learned and a standard review are captured at the program management level, and project managers follow a standard training program. The training program takes advantage of several resources and covers many topics, including project management budget and schedule training, project-specific skills, and industry outreach with architect/engineer and contractor training. Overall, Sanders believes in collapsing the decision-making process as much as possible, but it is difficult to get all the necessary stakeholders at the table.

One of the biggest maintenance problems for MSCU is leaky roofs, and Breyfogle's team has instituted clear procedures at the program level to prevent problems, like not building flat roofs on new construction.

Minnesota State Colleges and Universities serves about 18% fewer students than UT, but covers a much more diverse collection of campuses and institutions, all on a budget that is much smaller than that of UT. In fact, according to Bill Breyfogle, director of construction and support services for MSCU, they currently have $250 million in ongoing construction, of which $50 million is earmarked for asset preservation, and no funds are budgeted in the current state funding cycle. Forced to take a "lean and mean" approach, Breyfogle has realized that they can employ many more of the principles of project management and rotation. They are in the process of reviewing procedures to capture a higher level of project oversight, perhaps along the lines of UT. The schools in the MSCU system have the approvals needed to delegate project management responsibilities to outsourced professionals, but school administrators often are not knowledgeable about design and construction procedures, so they are not informed buyers.

Breyfogle would like to improve this process by pre-qualifying a small group of architects and contractors from which to choose for projects as needed. They have made progress in a couple of areas where program management ideas are starting to get some traction. In the area of preventative maintenance, for instance, they have a program of conducting regular, infrared testing of their roofs to check for leaks before significant damage occurs. They have also been creative along funding lines. Since the state allows them to sell bonds for revenue-producing facilities such as dorms, bookstores, and cafeterias, they have been able to raise $36 million for those capital projects.

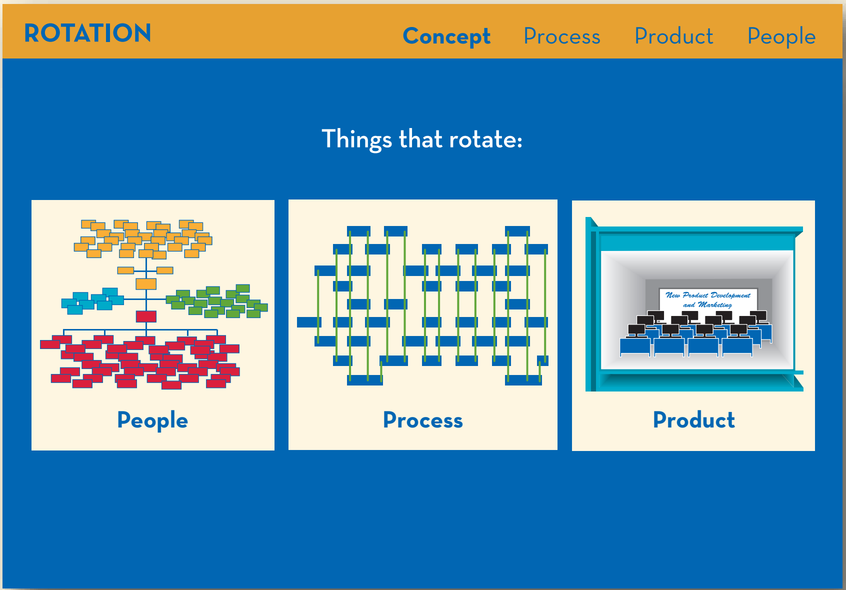
One of the biggest maintenance problems for MSCU is leaky roofs, and Breyfogle's team has instituted clear procedures at the program level to prevent problems, like not building flat roofs on new construction. Brad Burdic, national manager for preferred accounts at Johns Manville, is one person who could help Breyfogle with MSCU's roof management program. Johns Manville is a major supplier for commercial roofing systems, and as a recent acquisition of Berkshire Hathaway, they expect to become an even bigger player in the construction products market. Currently, 75% of their insulation and roofing business is re-roofing, and 25% is new construction. Burdic says Johns Manville has been working to apply rotation methods to their sales and delivery process called the Value Delivery Team Concept, which came out of their six-sigma initiatives. The approach takes into account process repeatability and speed. They constantly analyze the issues that affect the owner or architect at key points in the process in order to provide information and materials in a timely fashion. For programs like Breyfogle's, they could provide design consultation early on in the design and construction process.

With more than 35,000 employees and $5 billion in annual revenues, Warren Dean, group vice president for Jacobs, is taking advantage of rotation concepts for internal management of the organization and for program management for clients.

Jeff Stephens, president and CEO of BSW International, an architectural and engineering firm that provides services to companies nationwide, said his company was founded on the principles of program management. However, he pointed out that the culture of owner serial builders is hard to change when trying to promote rotation concepts. BSW International works within the firm to capture innovative ideas that will help improve construction programs. Similar to the approach being used to teach architectural students at Texas A&M, BSW's approach is multi-disciplinary. Nonetheless, they work with few clients that take a prototype approach like Target's program. Often, their work for national chains is done through developers who generally don't get involved directly in the construction process. While few of their clients are ready to adopt the rotation concept, the firm itself has taken advantage of rotation by instilling a program management culture, which seeks a clear understanding of client vision and goals and strives to provide operational consistency and continual improvement throughout the organization.

With more than 35,000 employees and $5 billion in annual revenues, Warren Dean, group vice president for Jacobs, is taking advantage of rotation concepts for internal management of the organization and for program management for clients. The company works with such a diverse cross section of industries

Exhibit 4



Source: Chuck Thomsen, Chairman of 3D/I, and the slide show created by Miriam Swift, Jim Avant, and Jesse Wells, of the 3D/I R&D team.

around the world that it is a challenge to capture information on a company-wide scale. In order to capture as much common knowledge as possible and infuse new ideas into the industries with which they work, Jacobs rotates managers and craftspeople across markets. They devise work process maps for every industry and capture best practices. They are able to establish universality to a high degree and respect the fact that each industry has specific work instructions and client needs. Because industries are cyclical, many of their clients build several small projects while only sometimes building a large project. They capture the different expertise required for large and small projects by creatively adapting procedures across the company and rotating inexperienced people through both small and large projects. According to Dean, this approach benefits Jacob's clients who want the "blended benefit of their industry knowledge."

Dean's observations from Jacob's markets paralleled those of many others at the Rotation Roundtable as he noted that the owners must drive the change from a project to a program mindset. "The construction industry is shifting toward program management because other sectors of the economy are moving that way." That shift is, in part, an answer to an evolutionary change toward greater project complexity; however, the industry has only begun to realize the potential benefits of program management. The industry will need new systems to adapt project management thinking to that of program management, but the next evolutionary moves in the realm of program management will likely include ideas not now part of project management. In order to make these breakthroughs, according to Dean, first, the industry needs to remove the reluctance to share information in order to get transparency across programs and between service providers. Vendors can help speed the change process by adding their expertise early on in the design process, but the industry has not learned how to get to that point, yet.

Steve Brandt, strategic account manager for Trane Global Business Development, recognized both the challenges and opportunities for suppliers getting involved with programs and rotation ideas. As a leading global provider of indoor comfort systems and comprehensive facility solutions and with current annual sales approaching $5 billion, Trane is well positioned to meet the challenges of supplying construction programs. Nonetheless, Trane has its work cut out for it and needs to get on board earlier in the program cycle. Construction product and system suppliers need to work to understand the construction model of owners and create a complimentary delivery process. Seeking to bring value-added solutions to the building process, Trane will need to learn how to provide consistent delivery on a global basis.

Listening to the diverse group of owners and construction-industry service providers at the table for this meeting, rotation, or a similar concept, is certainly a candidate for the "next big thing" in construction.

Overall, the proceedings at the Rotation Roundtable made it clear that construction products manufacturers, although they have much to offer construction programs, have some catching up to do if the industry is truly moving toward the principles discussed in this forum.

Is rotation a concept that is on the verge of revolutionizing the construction industry? Listening to the diverse group of owners and construction-industry service providers at the table for this meeting, rotation, or a similar concept, is certainly a candidate for the "next big thing" in construction. Clearly, not all serial builders will duplicate Target's practices, but owner demands for reduced risk, greater collaboration, shorter delivery schedules, and lower costs to complete projects will continue to challenge the thinking of construction-industry service providers. There is great opportunity for a creative new delivery system that will answer all of these needs. Rotation will gain traction only when companies prove that there is competitive advantage to adopting these ideas. Some are realizing those benefits now; others are working on them. ■

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Departments

CONSTRUCTION MATERIALS

Global Consolidation in Construction Materials

The construction materials world recently received news of two major mergers. Cemex acquired RMC, and Holcim, at the time of this writing, is in the process of acquiring Aggregate Industries. These deals, valued at $4.1 billion and $3.4 billion respectively, represent consolidation in the construction materials industry at the highest levels. This quarter, we will attempt to answer a few common questions raised by this recent flurry of "mega-mergers."

Is this a new trend? Definitely not. Consolidation in the global construction materials marketplace has been underway for more than 15 years now and shows no signs of abating. However, the size of the deals has increased over time.

Will there be more mergers of this size? Yes, it is likely. As the world market consolidates, it is almost certain that further combination among the top 10 to 20 companies will continue. As evidence to support this observation, you simply need to look at other, more mature industries such as energy production or automotive manufacture. Each of these industries has witnessed significant merger activity during the past decade involving their largest companies.

What is the business strategy driving these acquisitions? There is no single, simple answer to this question; several factors are involved. First, in each of these recent mergers, the global geographic footprint of the acquired companies was a key factor. By expanding into as many worldwide markets as possible, this should, in theory, provide a "geographic diversity" to the combined entities. Second, the strategy of vertical integration continues to be a major theme, particularly with the combination of cement, aggregates, and ready-mixed concrete that was present in these situations. Third, growth is demanded by the investment marketplace. Construction materials, in the economically dominate countries of the world, is a mature industry with relatively low real-growth rates. Lastly, the availability of capital is another influencing factor. Companies the size of Cemex and Holcim have access to significant sources of capital, and as long as they can find investment opportunities such as RMC and Aggregate Industries, then they will be able to secure the capital to procure them.

I am an independent producer of construction materials. What do these mega-mergers mean to me? Depending upon the location of your marketplace, it may mean nothing or it could be significant. Being a dominant producer of cement and aggregates, these mega-producers can certainly influence market conditions where they have a significant market share.

Why isn't anti-trust more of an issue in these deals? Each of these deals had relatively little anti-trust challenges. In the Cemex/RMC deal, RMC was required to divest of some of its operations in Arizona, but that was it. At this time, it appears that no anti-trust issues will be raised in the Holcim/Aggregate Industries merger. The primary reason that these transactions escape anti-trust scrutiny is that aggregate production in the United States is approximately 40% consolidated, which is measured by combining the production of the top 10 producers against the total amount produced, and in the case of ready-mixed concrete, the top 10 producers control approximately 25% of the total annual production. In both of these instances, when compared against other major industries, these are still relatively low levels of industry consolidation. Cement manufacture, on the other hand, is significantly consolidated with approximately 70% of worldwide production held by the top 10 producers. Since these mergers didn't involve significant amounts of cement manufacture, only certain individual marketplaces were examined for anti-trust issues.

I am thinking of selling my business. Does this mean there are two less "buyers" out there? The answer is yes and no. RMC and Aggregate Industries were both active buyers in the construction materials industry, and there will be certain businesses that either of these companies may have had a strategic interest in acquiring, that their new parent companies will not. However, because of these acquisitions, the pressure to pursue available acquisition opportunities will only increase among the remaining buyers. So the consolidation of two buyers will have little impact on the acquisition marketplace.

Will these mergers impact the cement shortage? Over the long term, they should help the worldwide production of cement as producers who are vertically integrated will be more likely to undertake capital expansion projects.

The construction materials industry has changed significantly in the past 20 years. What will it look like 20 years from now? Crystal balls are always dangerous instruments, but it is possible to make some reasonable assumptions about the direction the industry is headed. The first prediction is that the industry will undoubtedly continue to grow. The infrastructure requirements worldwide will rapidly increase, especially as countries such as China and India continue with their economic development efforts. Also, programs such as LEED will increase

Crystal balls are always dangerous instruments, but it is possible to make some reasonable assumptions about the direction the industry is headed. The first prediction is that the industry will undoubtedly continue to grow.

the use of mineral-based construction materials. The second prediction is that larger firms will have a distinct advantage in permitting new operations. The time and cost involved in developing and permitting a new aggregates operation, or a new cement plant for that matter, definitely favors organizations with deep financial resources. The third prediction is that the level of private ownership will be significantly less than the present level. The business succession issues for privately held organizations are increasingly complex and, thus, many of these private owners are likely to seek a sale as their ownership exit strategy. All of these predictions lead to the summary conclusion that the industry will continue to consolidate.

In conclusion, these "mega-mergers" are not an isolated instance, but rather, part of a larger theme of industry consolidation. Hold on, it will only become more interesting. ■

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ENGINEERS AND ARCHITECTS

Design Firm Strategy: Why Retreats Alone Can't Do the Trick

Compared to corporate America, most engineering and engineering-related firms are small. Even the large firms in our industry do not constitute "big business." Most industry firms are privately held, and many follow a professional services model of management and governance. Nevertheless, engineering firms are still growing business concerns, facing all of the same strategic and operational challenges of any business.

Happily, the process of strategy development has become the norm for mid-sized firms (those with 100 to 500 persons) and larger firms. Perhaps not so happily, the industry has developed a paradigm of strategic planning that is questionable and may be doing many of these firms a disservice. This paradigm is the tyranny of the management retreat. The idea is that the balm of a management retreat constitutes good strategic planning. For many, if not most firms, the retreat defines the effort. Since staging retreats is not how the world of "real business" actually crafts strategy, it begs the question of why our industry has become so married to this notion. It is almost as if conducting management retreats has become synonymous with the idea of sound strategic planning.

Since staging retreats is not how the world of "real business" actually crafts strategy, it begs the question of why our industry has become so married to this notion.

It is easy to see how this paradigm developed over time. After all, engineering firms are full of engineers. Engineers are trained to solve problems, and they are generally good at it. Ergo, the logic that "we're a smart bunch of professionals that should be able to lock ourselves in a room for a weekend and fix almost anything" is seductive. However tempting the logic, the reality is that crafting good business strategy takes a lot of time, is an iterative process, and may run counter to prevailing executive opinion. By now, you may think this article is making a position against management retreats. Not so. Management retreats can be useful things, for a variety of different reasons. Certainly, they also have their place in the process of developing strategy. However, there are things that we can and should learn from how the world of "real business" goes about this process. Retreats alone do not make business strategy. Let's take a brief look at some of the problems this industry paradigm creates and some ways we might break free of it.

A good strategy process needs to be defined in the context of a firm's particular situation.

A LACK OF ITERATIVE THINKING AND DECISION MAKING

A good strategy process needs to be defined in the context of a firm's particular situation. However, it also needs to draw on some standard process protocols. Most of these things are shortchanged or circumvented altogether, when a firm decides to run off on a retreat one weekend. While a facilitator can referee for a couple of days, there is simply no way that an adequate process or model can be accommodated in such a brief period of time. Larger corporations often take months, and in some cases years, to develop the background and analyze the firm's situation before finalizing the overall strategy, which is intended to carry the firm for several years, barring some significant market change. Granted, our firms are smaller, opportunistic, entrepreneurial, and need to be more facile. Create the strategy over a weekend? That's giving a good process short shrift.

DISCUSSION IS NOT ACTION

Another problem that evolves from this mindset is the idea that the cathartic release experienced during retreat exchanges somehow equates to business results. In his well-known work on merger integration, *Five Frogs on a Log*, Mark Feldman reviews a children's parable: five frogs are on a log; one decides to jump off. How many are left? The answer is five. His point is that deciding and doing are two distinctly different activities. My experience is that two-day management retreats are big on exchanges and proclamations, but short on actually doing once back at the office.

CONSENSUS AND CORRECTNESS ARE NOT THE SAME

Another problem bred by retreats, is that with enough engineering degrees in a room, it seems as though the answer has to be in there somewhere. While pooling the ideas of smart people is good, it is simply not adequate. Very few management teams are operating with sufficient data in their management retreats. There are just a few market-research efforts backing up the opinions, the input from clients is sorely lacking, and, in short, everyone is breathing the group's collective carbon dioxide. Closely related to this problem is the idea that if consensus is achieved, it must be the right answer. History is fraught with examples of the majority opinion being wrong. Remember, at one point, most people thought the world was flat. Business strategy that is derived with a lack of market information and consensus-building is suspect at best.

Another subtle tyranny of the management retreat is its tendency to divorce strategic thinking from business reality and the need for implementation.

RETREATS AND REALITY OFTEN DIVERGE

Another subtle tyranny of the management retreat is its tendency to divorce strategic thinking from business reality and the need for implementation. Just "doing it over the weekend" reinforces the idea that somehow, this is not "real work" on which we can spend weekday hours. Combining the retreat sessions with golf, nice dinners, and other elements of social bonding, we reinforce the idea that this is some form of boondoggle, related only tangentially to what we have to do when we get home. In short, too much retreat emphasis is "event" focused. The real focus needs to be on an ongoing process of strategic research, thinking, planning, and execution. Retreats can have a useful role in all of this, but they should not usurp the focus.

So, can the larger business world and its approach to strategy development give us any help here? Most of their processes and approaches would be too time consuming, too expensive, or both to be practical for most engineering firms. However, there are some lessons that can come out of classical strategy development that you can adapt. Here are some pragmatic recommendations to consider that will help put diligence in your overall strategy development process, without breaking the bank or being inordinately time consuming:

Don't just hire a consultant and limit their role to facilitating.

While you are spending money, you may as well spend money for knowledge and you should force your team (yes, your partners) to utilize it. Also, give your consultants some latitude in helping you define how the process might unfold over a period of time. Too often, firm principals hire an outside facilitator and give this person all the instructions on how they want the process to work and the events to unfold. If you are hiring someone worthwhile, this is a waste of their expertise and you are likely under-employing them.

Make selective use of outside resources.

Publicly held companies and larger businesses have access to a lot of outside information. Privately held engineering firms pale in comparison. Selectively inject outsiders into the process. Those outsiders might be consultants, researchers, authors, clients, board members, etc. The point is to make sure that outside data and perspective make it into the decision-making mix.

Ensure that a thorough background study of your current situation is performed.

A large company might spend months or years on this, which could be overkill. However, some internal due diligence on the firm's strengths and weaknesses and some external market research to validate what the firm might consider in terms of market direction is a minimum.

Get some oxygen into the boardroom.

Remember the comment above about everyone breathing everyone else's carbon dioxide? That's what happens from pooling inside perspective and settling on the result. In addition to utilizing outsiders to analyze and perform research, you should also seriously consider having them in any retreats that are held. How many firms have client focus groups before the retreat or invite their best clients to participate in the retreat's strategy-development process? If you answered not many, you are right. But, it would be a great way to get some oxygen into the boardroom and make sure that the outside world is adequately represented.

Remember, good strategy is iterative; it is unreasonable to think that we should have all of the right answers just because we had a meeting.

Utilize market research not only on the front-end, but also during the course of the process.

This will help validate decisions coming out of the boardroom or the management retreat. Remember, good strategy is iterative; it is unreasonable to think that we should have all of the right answers just because we had a meeting. Research should be used to not only gauge the situation upfront, but also to test, validate, and calibrate the decisions and assumptions that are being generated by the management meetings.

Put two times the amount of focus on an implementation process than you put on the process of having retreat sessions.

Harvard strategist Michael Porter once said that he would prefer a "B" grade on strategy with an "A" grade for implementation, over an "A" strategy grade with a "B" implementation grade. Obviously, great strategy doesn't matter much if it doesn't get implemented. Weak implementation is also a great way to engender cynicism with the entire effort over time. Take some of the limelight off the retreat, and put it on how people are going to do things when they get back to work Monday morning.

Create more strategic thinkers.

The more that you can reinforce that strategy development is a continuous and ongoing process in the business, the better off you will be. This will take the pressure off any given management retreat to produce the "holy tablets" and engender a more realistic understanding of what needs to be done over time to craft and implement good business strategy. Additionally, the more of your firm's principals that are thinking strategically about the business, the more effective they are likely to be in making things happen in the marketplace. Since professional services firms are revenue-sensitive businesses, this is an important outcome.

Retreats are good tools, but they can't develop strategy by themselves. Challenge your team to take a more holistic approach. Good strategy takes time, effort, and resources. You are not going to fix it over a weekend. ■

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HEAVY HIGHWAY/UTILITIES

Conditions Ripe for Increased Use of Program Management

Program management is best described as a management process, and not a construction technique.[1] Its implementation and use make this statement accurate. The decision to go the program management route is, at its core, one of how to manage extraordinary demands for facility space and/or infrastructure given limited resources, either people, finances, or both. Program management is a method for responding to and managing a sometimes rapidly evolving and more challenging construction landscape. Three specific issues have combined to create increasing opportunities for program management. They are: 1) construction demand far exceeding supply/resources, 2) labor/hiring restraints (primarily a public sector issue), and 3) the expanding use of design-build as a construction delivery method.

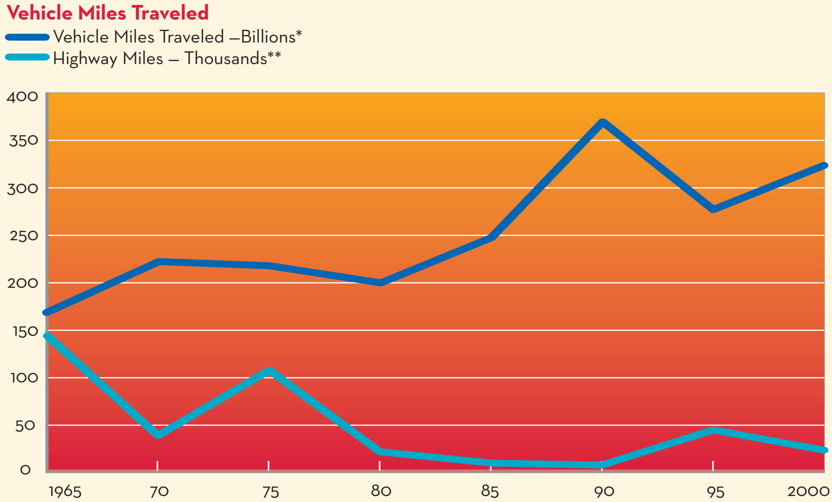
You don't have to look very hard for examples of facility space or infrastructure demand far exceeding the existing ability to satisfy demand.

For the most part, program management has been largely confined to the public sector. The public sector faces these three issues mentioned previously much more acutely. Many of the following examples are related more closely to public-agency issues, but the differences are often minimal and equally apply to the private sector. At the end of this article, we will discuss how program management could further change the construction delivery process for all stakeholders. Program management is not a cure-all, and it will not forever be the construction management process of the future. It is just one of the options available until something better comes along or the next industry evolution occurs.

The level of demand is far exceeding limited capabilities and/or resources. You don't have to look very hard for examples of facility space or infrastructure demand far exceeding the existing ability to satisfy demand. Highways and schools are two such examples. Let's face it, we are a driving society. No matter how much is sung about the praises of mass transit, we prefer the comfort and privacy of our own vehicles. Since 1960, the vehicle miles traveled in this country have grown more than 10 times faster than the miles of highway.[2] The following chart (see Exhibit 1) illustrates this point even more succinctly. Likewise, crowding at our nation's schools is an issue. This item is most frequently cited by the

Exhibit 1

Growth Comparison of Highway Miles and Vehicle Miles Traveled



* *United States vehicle-miles/highway*

** *Public road and street mileage in the United States/paved and unpaved*

Source: FHWA

general public as the major problem facing the local public schools from 1994 to 2003.[3] In 1999, about 14% of schools exceeded their capacity by 6% to 25%, and 8% exceeded it by more than 25%.[4] It's not likely to get any better, considering that the U.S. Department of Education projects the number of school-age children, ages five to 17, to increase by almost 10 million more over the next 25 years.

Public agencies are being forced to do more with less from a staffing standpoint. In recent years, we've witnessed record amounts of fundraising to catch up with the demand for each of these aforementioned markets. At the same time, many public agencies are under state and local mandates to maintain or reduce staff. This compounds problems for these agencies. First, more and more is being required. And second, they have to do this with the same number of people or fewer. Surprisingly, many can't or struggle to handle the volume of work required. Outsourcing provides one means of meeting these demands, but some agencies now have 20% or more of their staff as consultants, near the operational limit. Program management allows these understaffed agencies to off-load some of the demands without the need of staff additions, whether they are permanent or consultant.

Some may view the issue as one of chronic understaffing. Not necessarily. Consider the mission of a state department of transportation or a school district. A school district's primary mission is to educate children, not to build schools. The more school districts are allowed to focus on their true mission, the better they will do at meeting it, just like business in general. Program management, makes this core mission focus more achievable for many owners.

With greater pressure to get more done in a shorter amount of time, many public agencies have turned to design-build.

The construction delivery model is changing. Design-build is much more prevalent, changing the owner's involvement in the project. With greater pressure to get more done in a shorter amount of time, many public agencies have turned to design-build. Since 1985, the Design Build Institute of America reports that design-build has grown from 5% to 40% of non-residential design and construction in the United States. And now, in nearly half of the states (23), design-build is widely permitted, in some cases by all public agencies for all types of design and construction.[5] Given the significant increase in the use and application of design-build, few believe this trend will end anytime soon. Eighty percent of all design and construction firms responding to an industry survey predicted an increase in the use of design-build over the next five years. The Design Build Institute of America estimates that design-build could represent

50% of non-residential design and construction by 2015.

Design-build relates to program management in the way the owner is involved, or not involved, in the project. With construction-led design-build, the owner loses the architect or engineer as its advocate or project representative. Program management can re-establish that connection for many owners while still allowing a design-build delivery option to achieve shortened construction schedules. Since project involvement is still largely desired, or even required, by many public owners, project management fits the bill.

What do these issues mean? In short, conditions and trends in the industry are creating an environment that make program management a much more viable and attractive consideration. End-user behavior drives the buying decision.

Danger exists when buying behaviors change and stakeholders can't adapt. Program management has the ability to change the competitive construction landscape significantly. When E&C firms become program managers, you can bet that they will be both smarter construction buyers and sharper negotiators than the owners they represent. If you don't have the ability to become a program manager, are you establishing relationships with firms that can? ■

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[1] *"Project Management: Programming for Success,"* Engineering News Record, *1/21/02.*
[2] *Federal Highway Administration, Bureau of Transportation Statistics.*
[3] *Phi Delta Kappa, Phi Delta Kappa "The Annual Gallup Poll of the Public's Attitudes Toward the Public Schools," selected years 1970-2003.*
[4] *National Center for Education Statistics, "Condition of American Public School Facilities: 1999."*
[5] *Design Build Institute of America, 3/15/05.*

PROJECT DELIVERY

Project Managers — Defining Great Planners and Communicators

The salespeople cultivated the relationship. The estimator toiled with the quantities and price. The controller negotiated with the contract. All this activity and the building has yet to break ground. After the deal is consummated, the success or failure of the project is dependent on the manager's ability to fulfill a multitude of roles. Effective managers are more than paper pushers. The roles that they fill in today's complex construction industry include:

- Delegator
- Mediator
- Designer
- Engineer
- Lawyer
- Accountant
- Risk manager
- Safety director
- Negotiator
- Estimator
- Salesperson

Organizations vary in the roles project managers are required to occupy. Regardless of the firm's structure, the project manager is the crux and funnel of information between the field and the customer. It is not uncommon for projects to fall prey to margin erosion, unaccounted change orders, and schedule delays. Managers of failing projects are subsequently labeled as poor accountants, negotiators, or delegators. Many factors contribute to a successful project, but a project manager's ability to effectively engage many roles on a project is often a key driver of project success.

The successful project manager begins to plan the budget, buyout, safety, close-out, and customer management long before the first piece of equipment arrives on the job site.

PLANNING

Planning and scheduling are often believed to be synonymous. Individuals often think that if the project is scheduled properly then they have planned properly. Great project managers know the difference. Scheduling project activities is only one aspect of a project's master plan. Planning takes place during the project's infancy and sometimes before the manager is chosen. Critical activities must take place between the sales and estimating team to ensure the management team has all of the essential information. Managers must look at a project in several dimensions and avoid a too linear perspective. The successful project manager begins to plan the budget, buyout, safety, close-out, and customer management long before the first piece of equipment arrives on the job site. In addition to planning, the manager must understand the interdependence and relationship between plans for budget, buyout, safety, close-out, etc.

The project manager is not solely planning the project. Rather, the project manager facilitates and delegates the planning activities. The estimators, salespeople, and superintendents all assume roles in gathering, disseminating, and translating critical information for the team. The carpenters, foremen, finishers, laborers, and subcontractors are responsible for implementation of the plans, and ultimately, the success of the project lies in their hands. The power and durability of the plan depends on the information that is transferred to the people responsible for implementing it.

Planning also allows for the equitable distribution of the resources used by the project team. Man-hours, finances, and time are finite. Regardless of the deliverables sold by the sales and estimating team, the success of a project lies in the project manager's ability to effectively plan and allocate these resources.

COMMUNICATION

Written or verbal, formal or informal, communication is the most important tool in a successful project manager's repertoire. When executives are asked the greatest trait a project manager can possess, technical competence falls a distant second to being a strong communicator. Effective communication is an all-encompassing determinant of a project's performance. Communication of the project's goals, objectives, and ultimately the finished product, is the primary responsibility of the manager. Means of communication vary. Meetings, requests for information, conference calls, letters, and change orders are several mechanisms to convey the mission of the project. In each case, there is a methodology to provide effective delivery of the message. Pundits would say that effective communication also serves as documentation in the event the project requires legal action. Argumentatively, one might pose that if a project manager is a truly effective communicator, it is unlikely that the project would deteriorate to a litigious level.

Planning and communication have a symbiotic relationship. Planning is only effective if it is communicated, and communication is only effective if planning has taken place. For example, pre-construction planning is a failure if it is not communicated in a timely fashion to the implementers of the plan. Likewise, effective communication in a reactive situation such as dispute resolution may be the result of ineffective planning.

The difference between reactive and proactive planning and communication also provides great comparative evidence between weak and strong project managers. By maintaining an assertive stance, project managers are more likely to maintain control of the project's schedule and budget. Defensive planning and communication are simply reactions to a project's happenings, good or bad. "I don't have time to plan. I am too busy to meet with my superintendent and discuss the project." A change in this kind of attitude and shift in thinking are required to make planning and communication deeply ingrained, positive habits. Being in a position of control provides the manager the opportunity to forecast a project's profit margin, manage risk effectively, prevent catastrophic accidents, and impact the profit margin in a positive fashion.

Planning and communication have a symbiotic relationship. Planning is only effective if it is communicated, and communication is only effective if planning has taken place.

Mastery of planning and communication skill sets should be the priority of all project managers. Today's managers are often caught up in the minutia of day-to-day operations. They serve more as "firemen," extinguishing problems as they arise rather than preventing them from occurring. By focusing on immediate problems, the project manager loses sight of the project in a broader perspective. Margin erosion and schedule delays are the result of this type of reactive management. Planning and communication demand discipline to achieve the desired result, and managers who lead projects in this proactive manner should be the benchmark for the construction industry. ■

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Quarterly Interview

Soar like an Eagle:
An interview with Jeff Thomason

"One of the best lessons I've learned from the coaches I've been around is to really focus on the small things while being able to stay on top of everything, and to always be prepared."

Jeff Thomason in his Toll Brothers Inc. office in Burlington County, New Jersey.

***Kelley Chisholm for the* FMI Quarterly *recently interviewed Jeff Thomason**, who is currently employed by **Toll Brothers Inc.** and is in its project manager training program. Jeff is perhaps Toll Brothers' most "famous" trainee, having recently been featured on* Good Morning America, 60 Minutes, ESPN, *and in numerous sports publications, including* nfl.com. *A former tight-end in the NFL, Jeff was called up out of retirement by the Philadelphia Eagles, where he had played from 2000 to 2002, to take part in this year's Super Bowl XXXIX, after tight-end Chad Lewis was injured in the championship game. He is no stranger to the big dance, either, having played in two Super Bowls with Green Bay, including the* Packers' *victory over New England in 1996. **This interview focuses on how Jeff has applied lessons learned in his 10 years in the NFL to his role as a project manager in the home-building industry.** We also spoke briefly with Jeff's supervisor, Michael Assofsky, to hear his perspective.*

We've all heard the sports nomenclature that has become a part of the business world. "Having a game plan." "Maintaining a competitive advantage." "Taking the ball and running with it." And the list goes on. But when you think about it, this should come as no surprise. There are so many parallels that exist between football and business. According to a recent article in *Forbes*, professional football is the most valuable and profitable team sport in the world, and in 2004, the average team was worth $733 million. Football is indeed big business, and businesses are becoming more and more like football. Both strive to attract and retain the very best people for their organizations. And once they bring the best onboard, special attention must be given to developing them not only individually, but as an integral part of the team.

When you consider what makes an NFL team successful, two things immediately come to mind: teamwork and great leadership. But isn't this true for most

COMPANY PROFILE

Toll Brothers Inc. is a large national luxury homebuilder, top 10 in the nation by revenue, and winner of three of the most coveted awards in the industry: America's Best Builder, National Builder of the Year, and the National Housing Quality Award. Founded in 1967, Toll Brothers has more than 3,800 employees in 22 states. A multi-faceted real-estate development corporation, they have their own in-house engineering, architecture, mortgage, telecommunications, title insurance, insurance brokerage, landscape, component assembly, and manufacturing operations.

Toll Brothers has a very intensive training program for its project managers. A project manager in training works closely with a mentor and gains hands-on experience and training in the following areas: project management, construction management, quality control, sales and marketing, finance/profit and loss, land acquisition and development, land approval and entitlements, and personnel management and leadership. The training program is essential because project managers are accountable for everything in their communities and have profit and loss responsibilities for multi-million-dollar budgets. Toll Brothers' project managers must be well-versed in each step of the process.

businesses? Essentially, all work is teamwork in some sense. Only through teamwork is it possible for everyone to perform at their peak as a whole. Successful teams have a visionary who is leading the way and motivating others to help achieve the team's goals. And this is no small feat — leading people in any environment is certainly a challenge. Great leaders must possess the qualities that they want to bring to their teams, and one of the most powerful things they can do is to lead by example. Like in football, organizations win when their teams win.

FMI Quarterly: What led you to a career in construction, and specifically with Toll Brothers?

Thomason: I had some background in construction — summer jobs while I was in high school, plus I've remodeled parts of my house. I'm very interested in the development side of construction, and that's why I chose this company. They have a great training program where project managers learn all areas of the construction business.

FMI Quarterly: Tell me more about the project manager's training program at Toll Brothers.

Thomason: It's approximately a year-and-a-half to two-year program, where they teach you everything from sales to marketing to land acquisition to the management side of construction. You're thrown into everything. That's what I love about the opportunity here — with this training program, there is nothing I am going to miss as far as trying to learn this business, and there is so much to learn.

FMI Quarterly: What part of the program are you in now?

Thomason: [Laughing] I'm trying to grasp it all. Each day I grab a construction manager and go out into the field to become familiar with all of the home-building techniques and aspects of the business, as well as all of the paperwork involved in managing the project — basically, I'm just learning to oversee everything. For example, today I have a land acquisition meeting at noon, and I have sales meetings every Monday. I could go on for days about everything I do, and there's nothing really set in stone. Every day I come in there's something new to do or learn, and I am constantly adapting to change in this business.

FMI Quarterly: Do you work exclusively at this specific site, or do you travel to others?

Thomason: I'm based here. We have approximately 140 lots, and we're introducing a brand new product line for Toll Brothers. I'm learning to understand the architectural side of the business, and I talk to the architects every few hours, going over different challenges or situations we may have.

FMI Quarterly: What was your major at the University of Oregon?

Thomason: Psychology.

FMI Quarterly: Really? I imagine that brings a great depth to project management, especially when dealing with others.

Thomason: It does. And that's really the whole idea of project management — being able to manage others and understanding how to work well with different people. Everyone is different.

FMI Quarterly: When did you start playing football?

Thomason: I started when I was eight years old, in a Pop Warner football league. I played the game until I retired in 2002, and I definitely miss it — it was a blessing to go back and play in the Super Bowl this year.

I started when I was eight years old, in a Pop Warner football league. I played the game until I retired in 2002, and I definitely miss it — it was a blessing to go back and play in the Super Bowl this year.

FMI Quarterly: Have you always played tight-end?

Thomason: Yes, I have, even when I was eight years old they put me in that position. I grew up in Sacramento, and there were some guys I used to watch a lot, like Dave Casper. I don't know if you followed the Raiders — but I enjoyed watching them play.

FMI Quarterly: How did playing in the NFL help prepare you for what you're doing now?

Thomason: Having a strong work ethic has really helped me. Also, knowing that

I need to be able to understand all of the little things I have to do to succeed. That was one of the reasons I made it into the NFL. I was never highly sought after throughout my career. I came into the league as a free agent back when there were 12 rounds in the draft. So whatever team I went to, they were the ones that gave me the opportunity to keep playing. I did get traded to Philadelphia from Green Bay. As I mentioned, one of my strengths is my strong work ethic. Another is to take advantage of opportunities that come my way, and I've learned to benefit from the situations I'm in. One of the best lessons I've learned from the coaches I've been around is to really focus on the small things while being able to stay on top of everything, and to always be prepared.

Coaches Reid and Holgrem — they're obviously both very successful, and they're so dedicated to being successful.

FMI Quarterly: Tell me about the coaches you've played for — you've played for some great ones.

Thomason: Yes, I have! Andy Reid, Mike Holgrem — I've had some great coaches who are so dedicated to their jobs. Coaches Reid and Holgrem — they're obviously both very successful, and they're so dedicated to being successful. It's the way they lead that motivates their players and everyone around them. They listen to their players. It's not, "It's my way or the highway" with them. It's also the sheer amount of time they spend getting ready. They spend incredible hours preparing for every game, for every season. I admire that and their knowledge of what they do, their knowledge of the game, and their knowledge of their players — just every aspect of the game.

FMI Quarterly: Have you read "Winning the NFL Way" by Bob LaMonte? It talks about both Andy Reid and Mike Holgrem.

Thomason: Mike Sherman [who is on the cover of the book, along with four other coaches] was my tight-end coach. One thing about Mike Sherman is that he has this way of asking questions. He wants to know others' thoughts and ideas about the game, and I truly respect that even as a great leader, he always wants to learn from other people, regardless of who you are. It doesn't matter if you're the third string tight-end or the offensive coordinator, he takes time to learn everyone's perspective, and he really listens. That is such a valuable lesson to learn from him, and one of the reasons he is such a great leader.

FMI Quarterly: You played for Dave Shula as well. What was that like with both of you being brand new in Cincinnati?

Thomason: I was a young pup then. I liked Coach Shula a lot; I liked the way he worked with people. I think he was put in a tough situation with the Bengals at the time. He was only 33 years old and one of the youngest coaches ever to be hired as a head coach. He was a great leader, and I enjoyed working with him. I hear he's very successful with his steak houses, and certainly this is due in part to his leadership abilities.

FMI Quarterly: What do you think makes these coaches such great leaders?

Thomason: No. 1, it's their knowledge of the game, the knowledge of what they need to do, and the time they spend planning and getting ready. That's the main thing that I see. They know the game so well, and they are prepared for each situation that might arise. They are truly leading by example. For me personally, I'm led by someone who is leading by example. It doesn't matter if you're a first-year player or a 15-year veteran; it's all about how you work and how you show me that you work. That's what I admire about these coaches — they all put their time in, and they're all very dedicated.

FMI Quarterly: Let's move to leadership on the field with your teammates, in particular, quarterbacks who are looked upon as natural leaders. What makes a great leader on the field?

Thomason: Obviously, I've worked with some great quarterbacks, including Brett Favre and Donavan McNabb, both excellent leaders. What I respect about Brett and Donovan is that they understand who they are, and they don't put themselves above anyone else. As a quarterback in the NFL, it would be easy to start believing you're special, but these guys never do that, and that's what I appreciate about them. Take Reggie White [former defensive-end for Philadelphia, Green Bay, and Carolina], for example. He was the kind of guy who would listen to you. He wouldn't say, "Hey, I'm Reggie White. I don't have time for the third-string guy." He always made time. These guys take everyone in and treat everyone the same, and that's so important. They know they're looked upon highly, and people respect what they say. The fact that they really listen to everyone and give everyone their time, and treat everyone the same — to me, that's one of the things that makes a good leader.

What I respect about Brett and Donovan is that they understand who they are, and they don't put themselves above anyone else.

FMI Quarterly: Do you feel that the leadership roles of your teammates are different from those of your coaches?

Thomason: Yes, I'd say they are, especially since your teammates are out there on the field with you. That's hard for the coaches to relate to sometimes. Many of the coaches in the NFL did play in college, but really only a small amount of those who play in the NFL actually become head coaches. So even though they played in college, it's hard for them to relate to what you're going through as a player in the NFL. But the guys on the field with you, obviously they can relate. It's a fast game. When you watch the film, you have no understanding of how really fast it is compared to when you're actually out there. So you do have that bond with the guys you play with because you know they've been on the battlefield, and they understand that aspect of it. That's definitely an advantage.

FMI Quarterly: Will you bring any of those leadership qualities to your role as a project manager?

Thomason: My whole objective is working hard. Everyone is given certain opportunities in life, and I had a phenomenal opportunity to go play in this year's Super Bowl, and then to share that with my co-workers here at Toll Brothers. I know I'm blessed, but the only reason I was given this opportunity is because I worked hard. I was prepared, I stayed in shape, and I know the game. I know the offense well. For me, the biggest thing about motivating and leading coworkers is just doing what you have to do and being prepared for any situation. That takes hard work; it takes doing those little things, even if they're hard to do or boring.

For me, the biggest thing about motivating and leading coworkers is just doing what you have to do and being prepared for any situation. That takes hard work; it takes doing those little things, even if they're hard to do or boring.

FMI Quarterly: What do you feel constitutes a team player?

Thomason: A couple of things. One is having trust and faith in the people around you. To know that you're going to work as hard as you can. Another is dedication to your teammates, to the people around you, and to your work. Also, leading by example.

FMI Quarterly: The construction industry is very competitive, as is the NFL. What are the parallels that you see between the two?

Thomason: You're right; they are so very competitive, and there's so much learning involved in both. For me as far as construction, right now I'm at the bottom of my learning curve, trying to understand the business. It ties back to what I've learned from my coaches and my experience in the NFL. You have to start block-by-block and learn the little things, and do your best to understand the different aspects of the business. That's one way I succeed, by being prepared and knowing all of the little things, that helps the most.

FMI Quarterly: Tell me about being on the *Packers'* 1996 championship team.

Thomason: The whole experience was great. Again, it goes back to how lucky I was to be in that situation, and to win. It's so hard to win the Super Bowl. I've been in three of them, and all have been so close. We could have easily won or lost all three. While it does take a lot of luck, it also takes a tremendous amount of hard work. In 1996, we had a lot of great players who got hurt throughout the season, and a lot of players that showed up on the waiver wire — Andre Rison for example. Things have to fall your way, and that's the luck factor. In Green Bay, they live and die *Packers* football. To be around that, the energy there and the support we had, it was just a wonderful experience to be there.

FMI Quarterly: How much do the fans come into play in the overall scheme of things? For example, the Philly fans are notorious for being brutal at times.

Thomason: They certainly are hard-core here in Philly, but that's because they have so much passion. They live and die football; they live and die their teams. In some sense it's kind of scary, but in other ways you appreciate and love them because you know if you win, if you do well, you will never have better support. I do love the fact that they are so hungry here. In Green Bay, the great thing is that they just love you, regardless if you win or lose. The fans do help. For example, in this last Super Bowl we had an exceptional following, and to know you have that support makes you that much more hungry to win it for them. They deserve it because they put so much into it emotionally. They are devastated when you lose, and it takes a lot out of them. It's incredible. You want to work as hard as you can to win not only for yourself, your coaches, and your teammates, but also for the fans.

FMI Quarterly: I hate to ask this question, but how did it feel not to win the Super Bowl this year?

Thomason: It was hard. I wanted to win for so many people — Chad Lewis, Mike Bartrum, Donovan, the fans, and all of the guys. I really wanted it so bad for everyone because they deserved it. And one day they'll get it, I think. Chad has been a big inspiration in my life, the way he handles himself. He's absolutely incredible. He's such a great leader, and such a great man. He treats everyone so well. He's one of those guys that if you were to go in the locker room, he would be the most approachable and the easiest to talk to. He's always smiling, with such a positive outlook. I wanted it so bad for him, and like I said, for Mike Bartrum and Donovan as well, because they took so much of the pressure for the team. I feel bad for them, but it is the nature of the business. It's been a great ride for them, and they'll get back next year.

The hardest thing for me has been that my whole life I played a sport and was competitive physically, and then all of a sudden I'm 34 years old and retired.

FMI Quarterly: I read that you were keeping in shape by doing triathlons. When do you find time to train for those?

Thomason: I get up around 5:00 a.m. It's hard, but I get up early, and I bike or swim or run. My older brother has done a lot of triathlons and got me involved. The hardest thing for me has been that my whole life I played a sport and was competitive physically, and then all of a sudden I'm 34 years old and retired. Today, my body is not able to go out and do something as simple as playing basketball with the guys. My knees just won't let me do that. So I wanted to find something to do that was still competitive and to keep myself in shape — I love to eat. Plus, I swam in high school so triathlons seemed a good choice.

FMI Quarterly: You're participating in the "Escape form Alcatraz" triathlon in San Francisco this June.

Thomason: Yes, this is going to be a nationally televised triathlon. It's a mile and a half swim across the bay and then running and biking through the hills of San Francisco. My brothers and cousin are also taking part in it. I've started preparing for it now. I try to train an hour, hour and a half, each morning. Having kids, there's really not a lot of time to fit this in. I love spending time with my kids so training has to happen when they're sleeping.

FMI Quarterly: What impact has all the attention surrounding you playing in this year's Super Bowl had on you and your co-workers at Toll Brothers?

Thomason: It was such a thrill to be able to share it with them. To see them on TV — my boss, my construction managers — I loved it. I came back from the

My father has been such a wonderful person to learn from. He's so positive. There's no one more optimistic than my father, and he's had some tough breaks, some tough times in business, but he keeps on marching.

Super Bowl, and my office was a mess. There were confetti and pictures everywhere. Again, it was just a great experience to be able to share.

FMI Quarterly: What did the company think about it?

Thomason: They loved it; they absolutely loved it. It definitely got my name out there in the company (laughing). It was great marketing for them as well. It was fun to help them out in that way. It's such a good company and good people.

FMI Quarterly: Who has had most impact on your professional career(s)?

Thomason: My father has been such a wonderful person to learn from. He's so positive. There's no one more optimistic than my father, and he's had some tough breaks, some tough times in business, but he keeps on marching. I love that about him. He fights back and keeps on going.

FMI Quarterly: Can you tell us more about Toll Brothers — what you do and what projects you're working on?

Thomason: For the Chesterfield Greene [located in Burlington County, NJ] community, we have 144 lots that we're building. We have three construction managers, a couple of project administrators, and four people in the sales office. Overall, about 10 people. Right now, since it's a brand new community, I'm involved in contracting all of the subs, bringing in different trades and subcontractors, and keeping up with all of the paperwork that goes along with that. We contract every single trade so it's a lot trying to understand all of that. I also try to negotiate deals as far as prices and how much we're going to pay these guys per house for all of the options that we have. Since I'm so new to the industry, I have to show confidence and let them know I'm learning as much as I can.

Kelley Chisholm conducted the Thomason interview

FMI Quarterly: What are the biggest challenges that you face day-to-day?

Thomason: My biggest challenge is just learning all of the aspects of the business. People may have 30 to 40 years of experience, and they still learn something new everyday. I'm trying to absorb it all as well as learn the Toll Brothers way of doing things, which is new for me, too. Each day is different.

FMI Quarterly: Do you like what you're doing here?

Thomason: I do; I really do. I'm learning so much, which is great, and I'm constantly challenged, which I also enjoy. I know how hard it is to earn a buck in the real world. I'm learning that more and more. These days, you have to put in more than eight hours a day. You do work your tail off in the NFL, and you deserve what you get paid, but I know that's not reality for most people.

I'm learning so much, which is great, and I'm constantly challenged, which I also enjoy. I know how hard it is to earn a buck in the real world. I'm learning that more and more.

FMI Quarterly: As far as your project management training, is any of it conducted in a traditional classroom, or is it more trial by fire?

Thomason: It's really trial by fire. That's what I like about the business because that's how I learn the best. I learn by actually doing the work rather than just reading books. It's really great to be thrown into it. You gain so much from any mistakes you make.

FMI Quarterly: Where do you see yourself in five years?

Thomason: Hopefully still in this business. Still learning and doing well in this company. But most importantly, being a dad and being with my family.

FMI Quarterly: What are your next career steps here at Toll Brothers?

Thomason: I'd like to become the project manager here at Chesterfield Greene. That's what I'm hoping to do.

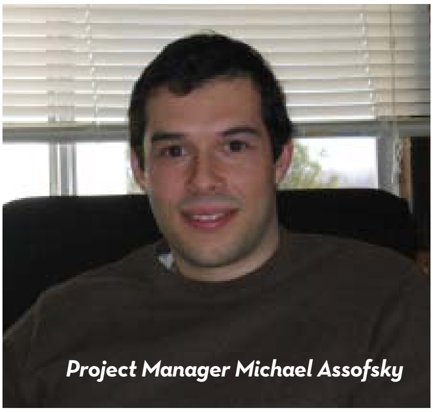
A few words with Michael Assofsky, project manager at Chesterfield Green

FMI Quarterly: How long have you been with Toll Brothers?

Assofsky: Three and a half years. I've been on this site since November 2004.

FMI Quarterly: Tell me about going through the project manager training program.

Assofsky: I'm sure I'm a bit biased, but it's the best program of its kind in the country. The training program teaches an individual like myself, or anyone in it



for that matter, everything they need to know about being a real-estate developer. I came to it directly out of undergraduate school where I was a finance major. Toll Brothers really draws from all walks of life for the program. Architects, engineers, attorneys, individuals with MBAs, ex-football players (laughing) — really people from all walks of life. It teaches the individual everything about developing a new home community. Our organizational setup is unique compared to most residential builders, and most commercial ones as well, I'd imagine. Each one of our communities, and we have 220 active ones, is run like its own small business with the project manager as the owner and entrepreneur of that business. Most residential builders have a hierarchy of operations in construction, and a hierarchy of sales, and they meet somewhere at the senior management level. Toll Brothers runs each community autonomously from the others, with the project manager overseeing everything, including the construction, sales, land acquisition, land development, and the approval process. That's why it's so unique. In our training program, it's all on-the-job-training, so you're out there and seeing it all, as opposed to seeing just one aspect at a time. You learn all aspects of the business together because they're so interwoven.

Each one of our communities, and we have 220 active ones, is run like its own small business with the project manager as the owner and entrepreneur of that business.

FMI Quarterly: At what point do they know you're ready to go from assistant project manager to project manager and fly solo?

Assofsky: You're constantly working with senior management even after you become a project manager. Even though I described the project manager as owner and entrepreneur of the business, we're a Fortune 600 company on the public market so we do report to senior management often. For the program itself, we have a detailed checklist of things that each trainee undergoes, experiences, and learns. The checklist has more than 100 items on it of competencies that need to be learned, such as pricing an option manual etc. Once every item has been checked off, and senior management determines that the individual has successfully completed the training program and has experienced all of the day-to-day type activities, then the trainee graduates from the training program and is no longer an assistant project manager in training. They become assistant project managers, and then at some point after that project managers. There's no real set determination as to exactly when that happens.

FMI Quarterly: Tell me about your formal mentoring program.

Assofsky: Basically, what I just described is also our formal mentoring program. When someone joins Toll Brothers as an assistant project manager in training, they are assigned a mentor.

FMI Quarterly: Does that mentor stay with the trainee the entire time they're in the program?

Assofsky: Yes, they do.

I'm still learning more even though I completed the program two and a half years ago. In this business, you're always learning.

FMI Quarterly: How many people have you mentored?

Assofsky: Just one so far. It's great because the best way to learn is to teach. I'm still learning more even though I completed the program two and a half years ago. In this business, you're always learning.

FMI Quarterly: Regarding all of the Super Bowl hoopla surrounding Jeff, from your point of view, did it bring everyone working here closer?

Assofsky: Oh, yes, it was great. Not only did it reinforce the sense of team that we already have, but it brought us together even more. What a rallying point. It was great, so much excitement. Of course, the piles of paperwork grew (laughing). I was missing my main man, and I spent all my time answering phone calls about him (again laughing), but I would do it all over again. It was a once in a life-time experience. It was incredible. Jeff signed with Philly on a Monday night, two weeks before the Super Bowl, and the next day we had seven local news crews out here. It was crazy. It was fun and quite a ride, for Jeff, and for all of us.

CONCLUSIONS

Most people in the construction industry would agree that effective leadership skills are critical in order to be successful as a project manager. The role of a successful project manager is to manage, coordinate, and supervise the work that occurs in the field and the costs associated with that work. The project manager is the principle person responsible for bringing the job in on time, within budget, with quality workmanship, and with a satisfied client at the end of the process. The project manager must skillfully manage the project from the conceptual development stage through final construction on a timely and cost-effective basis. It is obvious that Toll Brothers is committed to developing great project managers, especially when one looks at the depth of its project management training program. And it is also obvious that Jeff Thomason can bring much of what he learned in the NFL to his new career in the construction industry. ■

FMI Quarterly *sincerely thanks Jeff Thomason and Michael Assofsky for their contributions to this article and the time they spent with us being interviewed.*

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A Behavioral Approach to Construction Productivity

The behavioral model measures what people are actually doing and tests the effect of various consequences to improve construction productivity.

By Ralph James, Ph.D

Improving construction productivity is an often talked-about subject. Yet, many times we hear it talked about in abstract terms. For example, "Those people need to be more productive." Or, we may hear, "We waste a lot of time getting started each day." While these may be true statements, they are abstract statements and do not lead to solutions. Rather, they sound more like complaints. A behavioral approach, however, prevents excessive abstract thinking and leads the way to improving construction productivity.

The behavioral model is an ethical approach to management, which measures what people are actually doing and then tests the effect of various consequences. It is specific and concrete; it avoids the general and abstract. This helps to clarify expectations and the relationship between deeds and results.

Behavioral thinking offers quantifiable terms that abstractions do not. "Six of eight trucks left the yard an average of 18 minutes late last Thursday" specifies a measurable behavior. Now, there is a baseline against which improvement steps can be tested.

Critics of behaviorism have suggested this approach is manipulative and, therefore, unethical. But, then, all programs are really manipulative. Requiring construction field leaders to submit daily time sheets has manipulative consequences. If time sheets are late a) the office calls, b) a boss may yell, or c) crew members may get angry about late paychecks. These consequences cause a certain level of compliance. No behavior operates in a vacuum. We are all manipulated every day.

The issue thus becomes: Is this positive, overt, and effective manipulation, which clarifies expectations and presents fair consequences, or is it negative and covert, leaving construction personnel in an ethical darkness? Posting team performance records creates pressure to honor teammates by holding up personal responsibilities. Team pressure to achieve legitimate job goals is clearly ethical.

Above board, non-covert, management programs build trust. The ethical value that underlies an attitude of trust is integrity.

Ethics in construction means "doing the right thing." Most people have a sense of what this means, but clarifying expectations increases the likelihood that the right thing will be done. This is important because each business practice must exhibit process integrity (trustworthiness). If employees cannot trust that paychecks will be on-time, they will question both the process and personal integrity of the company. Above board, non-covert, management programs build trust. The ethical value that underlies an attitude of trust is integrity. This value shines through overt management systems and is hidden and confused in covert systems.

In an overt management system, late time sheets may have a different set of consequences: a) a data point is posted in the office, b) a quick call may determine the cause of the problem, and c) the field leader and office personnel may solve the problem working as a team. Implicit in this behavioral approach is the question: "Where did our process break down?" and not "Whose fault was it?" Faultfinding creates excuses and cover up. Process improvement creates goal achievement in an ethical climate transparent to internal and external customers.

The classic case of sales manipulation or more precisely, manipulation by a sales person further clarifies the ethical neutrality of behaviorism. If a project manager asks questions designed to elicit a yes/yes response when selling a change order, he or she may be following a well-known selling technique. Is this manipulative? Of course. Is it ethical? This depends upon a separate issue: Is the project manager proposing the change to help the project and therefore the customer, or is it just to help himself or herself? Clearly, if the selling process helps the customer achieve the project's goal in a cost-effective manner, we would judge the project manager's use of a standard selling technique as ethical.

If, then, the behavioral model is both a specific and ethical approach to construction productivity, we can tackle almost any motivation challenge. First, gather baseline data to determine the extent of the challenge. Then, with the assumption that the baseline is representative, brainstorm a way to intervene and improve the situation. How much data is needed depends upon your confidence level with the data.

Interventions must also be simple to administer. Many contractors avoid bonus systems for individual craft persons because of the administrative complexity in attributing specific contribution to gain. Foremen, superintendents, and project managers' individual bonus systems have generally been viewed as manageable. However, team-based incentive systems may well work in a way that includes craft personnel. Between them, serious consideration must be given to administrative simplicity and cost. In the following examples, notice the effect of just posting progress and simple team rewards. Less apparent, but not less important, these reinforcers were approved by those individuals for whom they were designed to reinforce. This avoids the classical mistake of expecting a reinforcer to work when the individuals to be "reinforced" do not care about it. Also, notice that each intervention contains reinforcement that quickly follows the behavior. Another common mistake is expecting, for example, annual safety awards to have a major impact on daily safety-related behavior. Reinforcers weaken over time. Conversely, a "thank you" or "good job" said immediately after a productive behavior can have a more powerful impact than an award given much later.

Interventions must also be simple to administer. Many contractors avoid bonus systems for individual craft persons because of the administrative complexity in attributing specific contribution to gain.

Exhibit 1

On-Time Start Baseline*

Number of minutes late

Crew (3 crews)	Monday	Tuesday	Wednesday	Thursday	Friday	Total
1	6	5	8	4	2	25
2	12	10	12	6	0	40
3	15	15	10	8	2	50
					Total minutes late x Cost per minute Cost due to minutes late	115 x 0.20 $230.00

** Defined as 100% ready in work area – does not include approaching work area or getting tools*

Intervention

1. Show baseline to each crew leader (See Exhibit 1.)
2. Explain savings opportunity and request help in improving on-time starts by:
   a. Preplanning
   b. Measuring on card posted in work area — running baseline
   c. Asking crews to help achieve an on-time goal
   d. Providing pizza lunch on Monday for crews with 100% compliance
   e. Providing praise to crews from crew leader and superintendent on results
3. Let's say the cost of three pizzas equals $30.00 per week. At a savings of $200.00 per week and an average of 100 minutes per week x 60 weeks equals 6,500 minutes. This totals 100 hours saved. So the job finishes 2.5 weeks ahead of schedule, avoids liquidated damages and risks, and creates happy customers.

Calculation of rework cost:

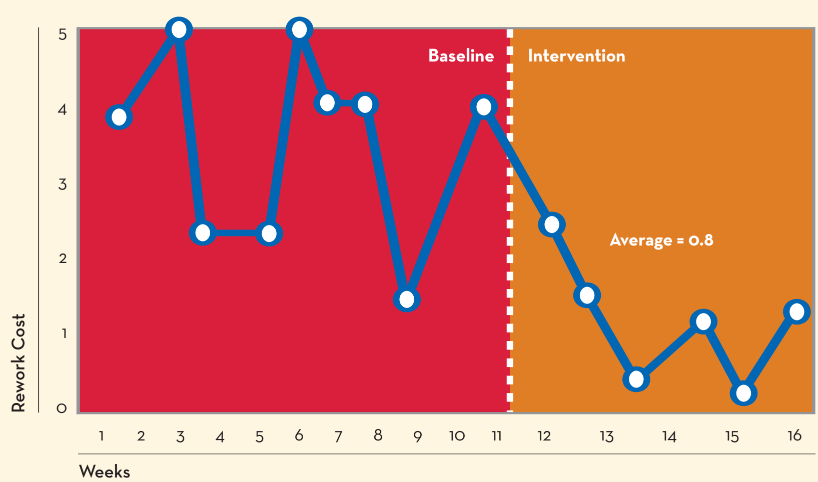
1. Incorrect installation
2. Tear out
3. Correct installation
4. Opportunity cost during No. 1
5. Opportunity cost during No. 2

Total Unit Cost = $100.00 (includes labor, materials, tools, equipment, and overhead)
Labor is 20% of $100.00 = $20.00
Rework has five layers of cost not counting schedule/customer impact. For baseline purposes, rework is $20.00 x 5 = $100.00 per occurrence.

Intervention

1. Each foreman is shown the baseline. (See Exhibit 2.)
2. Training in prevention through preplanning or short-interval schedules is provided.

Exhibit 2
Rework



3. Crew members are shown baseline and asked to suggest rework prevention ideas.
4. The chart is placed in the work area.
5. Finally, the superintendent gives praise to crews for each week that is below the baseline average.

Note:

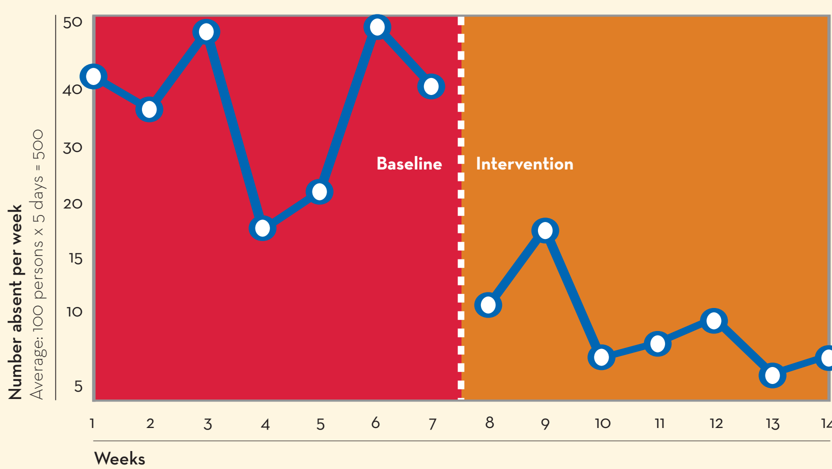
Superintendent reinforcement is a reward but also appeals to team pride. Pride can be a powerful force on a construction site.

Intervention

1. Each crew leader posts the baseline. (See Exhibit 3.)
2. Each crew leader begins the team baseline.
3. Leaders ask crew members to identify causes of absence.
4. Teams work together to reduce causes. For example, for car problems causing absences, the "buddy system" can be used to make phone calls and help with rides.
5. A pizza lunch is provided for each team with perfect attendance for the week.

Exhibit 3

Absence — 40-week Job



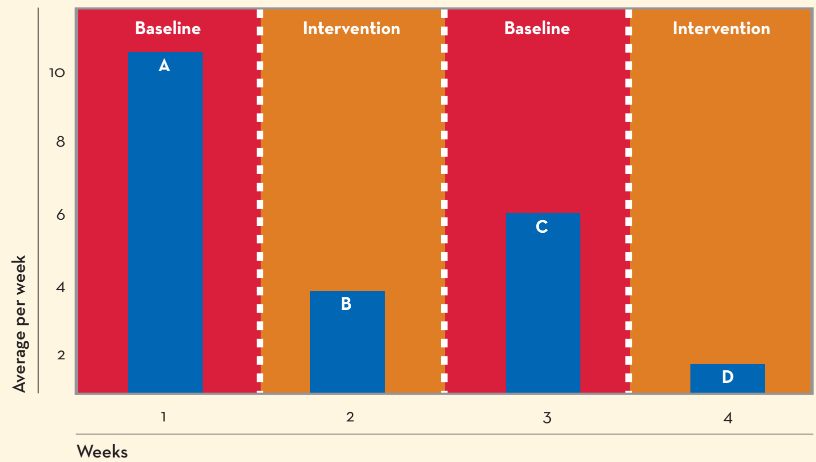
Intervention B

1. The foreman charts change from Baseline A. (See Exhibit 4.)
2. The foreman removes the chart, making no mention of tools left out during week three.
3. The foreman replaces the chart and continues program during and after week four.

Note:

The removal of the chart checks the effectiveness of it. If the effect of charting weakens over time, positive/negative consequences can be added.

Exhibit 4
Tools Left Out of Toolbox



Intervention

1. The baseline is shown to everyone. (See Exhibit 5.)
2. The chart is posted (continuous).
3. Everyone is challenged by the superintendent.
4. Teams remove obstacles to productivity, including:
   a. Making material available
   b. Repairing tools
   c. Improving information
   d. Working toward team goals.
5. An announcement of one-half of savings below estimate will be shared with crews.

Exhibit 5
Productivity — Units Produced Per Hour Worked

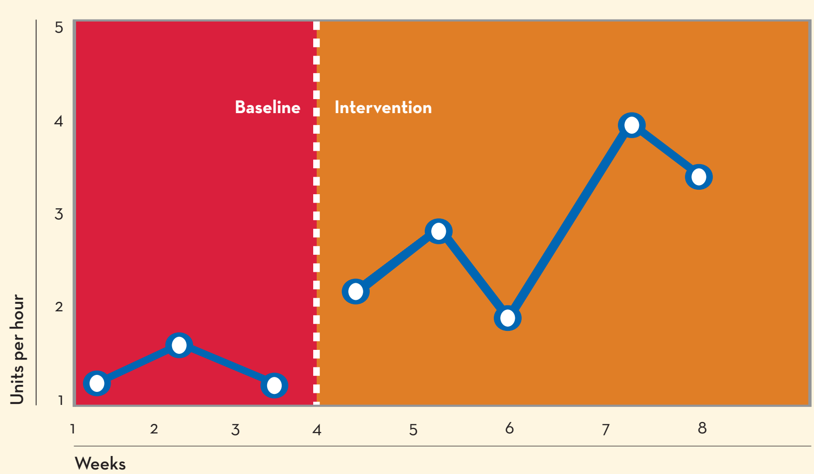
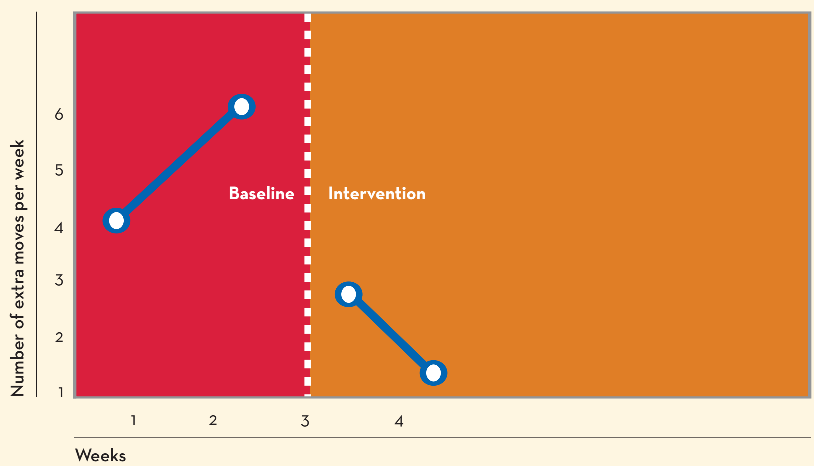


Exhibit 6
Extra Material Movement



Intervention

1. The superintendent develops a materials-management plan, including arrival times and placement strategy to minimize extra movement. (See Exhibit 6.)

Learning short-interval scheduling through shaping of behavior

Challenge: The foreman is not producing required two-week, look-ahead schedule.

1. The superintendent asks the foreman why the schedule is not being produced. Three reasons are given:
   a. "Our work changes so much I thought it was a waste of time."
   b. "I really don't know how to do it anyway."
   c. "If I do it, I'll get yelled at if I don't get it all done."

2. The superintendent addresses the cognitive elements first:
   a. "I understand the frustration change causes. I believe these schedules are reducing unnecessary changes. I want you to give it a try."
   b. "I'm going to walk you through the scheduling steps. I think you will do very well."
   c. "And I promise you will not get yelled at. You are one of our best leaders."

3. The superintendent shapes the foreman's behavior by:
   a. Scheduling time with the foreman to provide instruction on the short-interval schedule.
   b. Praising the foreman by statements such as, "Thanks for your interest."
   c. Helping out and communicating this to the foreman by saying, "Here is a pack of short-interval schedule forms with copies for me. I'll study each one and provide weekly feedback for a while."

d. Setting goals for the foreman: "Let's start with your goal for next week based upon this week's achievements. Where would you like to be by quitting time a week from Friday?"
e. Setting steps to reach the goal with the foreman: "OK, let's make a list of the key activities necessary to get you there."
f. Praising foreman's work on the goals: "This is a thoughtful list."
g. Working with the foreman to set up a timeline: "Now tell me how long each activity will probably take, and let's draw a bar beside it showing its duration." Drawing the first bar.
h. Offering praise: "Good job."
i. Giving a pen to the foreman to complete.
j. Showing the foreman how to schedule his crew: "Now staff your needed crew by day." (See Exhibit 7.)

Exhibit 7
Activity Form Section 3

Monday	Tuesday	Wednesday	Thursday	Friday
4	6	6	4	

k. Showing foreman how the scheduling helps the overall job: "Good, we can use Bill and Larry in another area on Monday and Thursday. You have already helped the whole job by making four labor days available in another crucial area while moving your part forward at a good pace."
l. Showing the foreman how to schedule equipment needs: "Now, write any special tools or equipment needs for each day. Put these on the bar like this:" (See Exhibit 8.)

Exhibit 8
Activity Form Section 3

Monday	Tuesday Crane	Wednesday	Thursday	Friday
4	6	6	4	
Drill				

m. Praising the foreman and explaining the record-keeping process. "Good job. Now, give me a copy, and explain your copy to your crew Monday morning. I'll check with you Monday afternoon to see how it's going. We will make any updates needed each day."
n. Concluding behavior shaping with the foreman: "I'm going to show your plan to the boss — he will be impressed. You and I will meet again next week. Thanks for your help."

Whatever the challenge, the baseline-intervention model for behavior improvement can assist improvement in construction productivity. But behaviorism is not the whole story. If the wrong job is chosen or poorly estimated, the job's external factors can override internal management. However, behavioral techniques may well help us to get the next job as they significantly contribute to our being the low-cost producer. ■

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E&C Acquisitions: Integrate or Operate?

Integration philosophies vary significantly, but acquisitions are a key element to growth strategy. This article looks at several key acquisitions in the E&C industry.

By Steve Darnell

Acquisitions have been a key element of successful E&C firms. Post-acquisition strategies, however, differ significantly. Some firms integrate immediately, some continue to operate independent subsidiaries, and some have a very slow, cautious approach over time.

When URS acquired EG&G, an organizational sea-change took place. URS became a different company. The No. 1 engineering-design-services-firm also became a tier No. 1 federal contractor. The firm that grew by acquisition between 1990 and 2000, integrating aggressively under the single brand, suddenly became two brands. As one analyst put it, the company went from being an integrator to a "clever operator."

Several of the major E&C firms have been quite successful, on balance, over the last 10 years, and all are enjoying strong positions in the current market. Culture and strategies are diverse.

THE INTEGRATORS

Jacobs: Perhaps the highest quality of the traditional E&C firms.

Jacobs has achieved a remarkable record of stable growth of earnings in the E&C industry. Through 2004, over the past 10 years, the firm produced 15% average EPS growth. This is unparalleled in the industry. In addition, it has maintained one of the highest operating profit margins with a low-risk profile. Jacobs avoids one-time business, and 85% of backlog is cost-plus contracts. The business model remains simple: focus on providing the best value for customers and maintain long-term customer relationships.

Acquisitions remain a key part of the strategy to maintain 15% growth. Purchases in 2004 included a 34% ownership position in Fortum's Neste operation, which will help win chemicals and oil and gas work in Europe. In addition, Jacobs purchased Babti, the largest Scottish civil engineering and infrastructure firm expected to extend expertise in the growing European infrastructure niche.

Jacobs has been the quintessential integrator of acquisitions. The company is proud of its strong culture. Distinct operating units with their own presidents and overheads are not the Jacobs style. Management has a strong devotion to the core mission and pushes it through the organization.

The major acquisition of Sverdrup Corporation in early 1999 was an example of Jacobs' resolve toward integration. Jacobs was the first of the majors to see the opportunity for growth in the U.S. public sector market and do something about it. They saw an opportunity to get into the federal programs in a very big way with the Sverdrup acquisition. Sverdrup had been wrestling with the issues of equity transfer since more than 50% of their stock was owned by their board. It was a major player in transportation and federal programs with revenue of approximately $1 billion.

Jacobs' management has a strong devotion to the core mission and pushes it through the organization.

The post acquisition honeymoon was not without heartburn. Sverdrup had entrepreneurial leadership in distinct operating companies that was unaccustomed to Jacobs' strict practices and more centralized organizational structure. Jacobs immediately combined Sverdrup units with theirs and formed some new entities.

There were some employee defections, (the buyer's most-feared consequence), anxiety about going public, and complaints about communication. But Jacobs went forward with conviction, knowing that these bumps would work out for the best. A majority of the Sverdrup people were quite happy with the renewed attitude toward a client focus and playing in a bigger league. Jacobs' business model brought a fresh approach to the municipal customer. A determined integration made the pain short-lived and the normally elusive synergies actually begin to happen.

Jacobs' acquisition history parallels its successful earnings track record. (See Exhibit 1.)

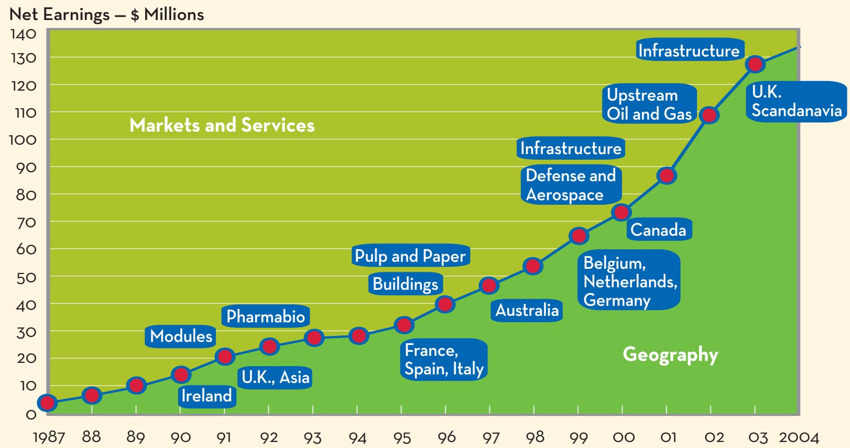
The names of acquisition targets over the years are difficult to remember. The milestones above are described by markets and geographies, not subsidiaries and units. Jacobs presents one face to the customer.

EMCOR: The original consolidator, evolving integrator.

Long before the specialty construction roll-ups of the overheated, late 1990s, EMCOR consolidated mechanical and electrical services. While most of these more

Exhibit 1

History of Successful Acquisitions



recent attempts at consolidation and integration failed miserably, EMCOR remained as a survivor with a strong business model.

Bankrupt as JWP in 1994, new management implemented strong processes and disciplines, which gradually allowed the company to grow with strength. While the roll-ups of the later 1990s were buying mechanical and electrical services at previously unheard-of prices, EMCOR sat on the sidelines. As these firms failed following 2000, EMCOR was able to selectively acquire using its hard-earned experience in integration and its strengthened balance sheet.

With more than $4.7 billion in revenues, EMCOR is the U.S. leader in mechanical and electrical construction, facility services, and energy infrastructure. The firm has had 38 consecutive quarters of profitability and maintains a strong balance sheet, differentiating it in the specialty services industry.

The company has made more than 75 acquisitions as it has evolved toward an integrated services firm. To date, the company is presenting a single brand to the customer and providing an array of services. An aggressive program of branding and brand building is now being deployed in an advanced stage of integration. The determination to integrate has allowed them to maintain a diversified business model and a recurring services business, and leverage their domestic network.

They acquired a major piece of one of the roll-ups, Comfort Systems, in 2002. In November 2003, they acquired the Siemens U.S. Facility Management Services, leveraging its core services.

Fluor: Gradual integrator of niches.

An integral part of Fluor's growth strategy was complementary niche acquisitions.

As the 1990s wore down, Fluor was stabilizing its businesses. In 2000, the decision was made to transform the business model from an operator of several major businesses to a focus on core E&C. The AMECO Equipment business was to be sold or shut down, and Massey Coal was to be spun off by year-end. Fluor then returned to a strategy of retaining global leadership in E&C services with a broadly diversified EPCM business mix by geography and industry. The primary growth strategy was centered around capitalizing on the cyclical markets. While power diminishes, oil and gas ramps up — what is called the Large Cycle Markets. An integral part of Fluor's growth strategy was complementary niche acquisitions.

In 2003, Fluor made four niche acquisitions for the first time in a number of years:

- Del-Jen, government-services provider focusing on the military
- J. A. Jones International Division, a division of the bankrupt Jones Group, primarily focused on embassies for the State Department
- Trend Western, a smaller services provider to military bases
- Plant Performance Services, an industrial O&M business.

These deals were in response to the stated strategy of increasing market share in government and O&M. Fluor acted on the government sector opportunity somewhat later than Jacobs and URS.

Integration strategy seemed gradual, allowing the niche acquisitions to retain their identity and brand for two years or so, and then blending them into the greater organization. For example, the acquisition of Marshall (a builder) and ADP (engineering services) was an effort to complement the microelectronics market. In 1998, the ADP Marshall design and construction unit was awarded the Aladdin Hotel and Casino, a turnkey project exceeding $825 million. By the time the job was complete in 2000, this design/build entity no longer existed; it had become Fluor. Interestingly, executives from these niche acquisitions went on to fill much larger roles within the parent company. Into 2005, Del-Jen and Jones International have retained their brands, but clearly this will diminish as they grow.

CB&I: "Transformational" acquisitions, cautious integration.

For years, CB&I was a sophisticated but specialized design builder of vessels — "a tank company." The new visionary management, which came on board with the 1997 IPO, having strong EPC experience, transformed the company with the acquisitions of:

- Howe-Baker (December 2000). This brought new solutions and capacity as a leader in hydrocarbon processing plants.
- Pitt-Des Moines (February 2001). This brought new geographies and capacity with a leader in aboveground storage, elevated water storage, and pressure vessels. It also enhanced the management team.
- Petrofac (April 2003). The acquisition added capacity and expanded CB&I's hydrocarbon processing infrastructure to serve key, growing end-markets.
- John Brown (June 2003). This brought new solutions, geographies, and capacity. It strengthened CB&I's international engineering and execution platform with a significant presence in London. It also expanded CB&I's presence in Russia, the Middle East, and the Caspian Sea.

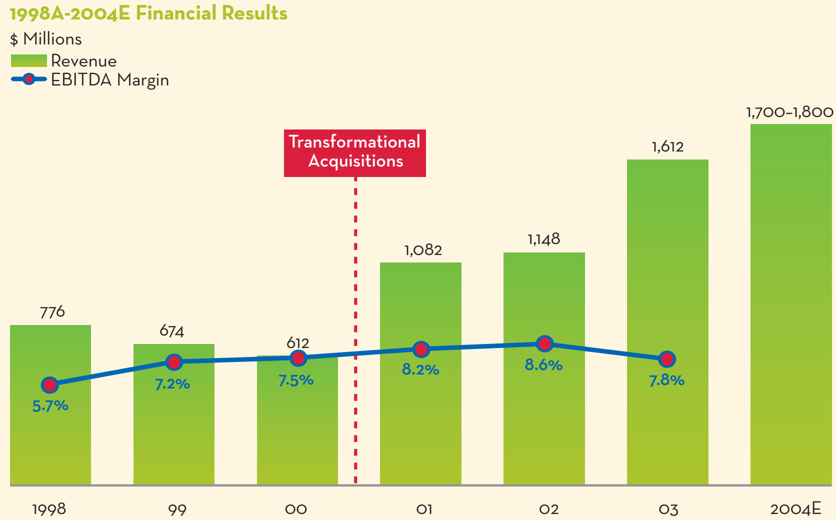
CB&I is one of the best performing industry firms on the basis of margins, becoming a fully integrated specialty E&C service. It is one of the few E&C firms that engages in firm price contracting, and it manages risk better than others. Its operating margins and returns on capital employed are nearly double the industry average. (See Exhibit 2.)

Integration of the Pitt-Des Moines business was immediate as the firms were similar. The rationalization of facilities and elimination of duplicate overheads created significant savings.

Howe-Baker was also a lump-sum, turnkey provider, and the culture was similar to CB&I. They shared a number of customers but provided different services, so the opportunity to leverage was great, and the merger positioned CB&I further upstream in the hydrocarbon arena. The operation is branded as CB&I Howe-Baker,

Exhibit 2

Solid Margins and Revenue Growth — 1998A-2004E Financial Results



Note: Adjusted EBITDA excludes special charges and the organizational integration has been steady. John Brown, TPA, and others have been handled similarly.

CB&I has expressed pride in their acquisitions, clearly aiding their integration. Gerald Glenn, chairman and CEO, said in the 2003 annual report:

"These acquisitions have been careful, deliberate, and strategic. We haven't gone out and bought something that we don't understand, that needed fixing up, or that didn't fit our culture. We've focused on companies that complement and extend our core competencies, are well-managed, and that are immediately accretive."

CB&I continues to look opportunistically for the right fit.

THE OPERATORS

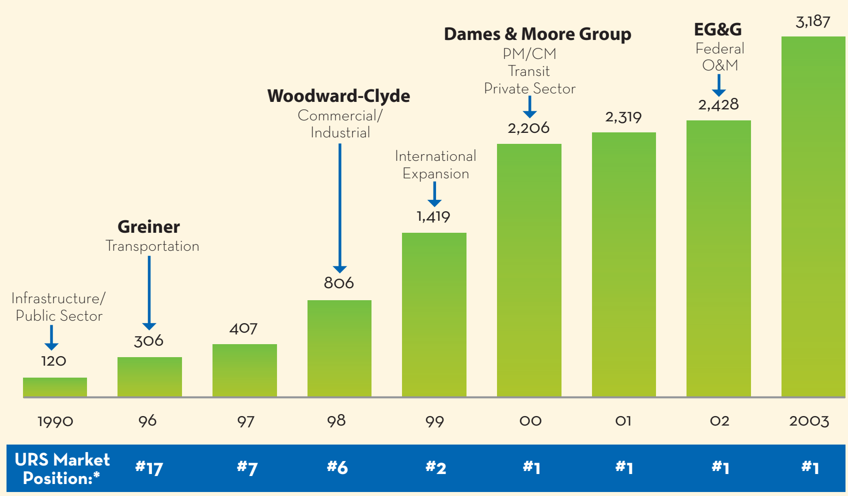
URS: Integrator turned operator.

With 27,000 people in 20 countries, URS is the No. 1 engineering services firm on *Engineering News-Record*'s 2005 list. In 1990, they were No. 17, and by 2000, they were the most successful acquirer and integrator in the business with a single brand. (See Exhibit 3.)

Recognizing the federal growth market opportunity, in 2002, they purchased EG&G in a highly leveraged transaction. As the analyst put it, they became a "different company." They are now two companies — the No. 1 engineering-design-services-firm and a tier No. 1 federal contractor — and a "diversified market portfolio." (See Exhibit 4.)

The market has reacted quite positively to this strategy, however. The public company is trading at the top of its range in earnings multiples as leverage has been relieved by free cash flow and a successful equity offering.

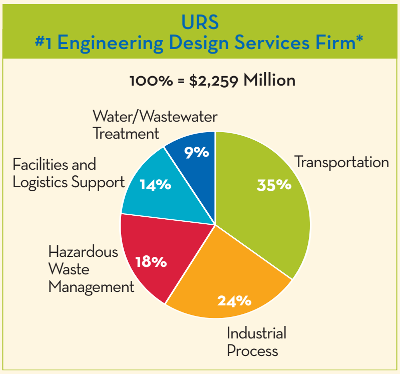
Exhibit 3
Successful Execution of Growth Strategy
Revenue, $ Millions



Source: ENR Magazine, April 2004

Exhibit 4

Revenue — FY03



Source: ENR Magazine, April 2004

Perini: Buy good companies and let them grow.

Perini has emerged over the last few years as one of the more stable E&C firms, performing as a public company. Strong top management has led the firm for three solid growth segments: building, civil, and management services. With good markets in hospitality and gaming and government services, the balance sheet was ready for niche acquisitions. By 2003, the acquisition of a diversified building firm in the Florida market, James A. Cummings Inc., has been positive. Perini has maintained the subsidiary, bringing it the resources to grow.

This was followed by the acquisition of Cherry Hill Construction, complementary to Perini civil operations in the mid-Atlantic, at the end of 2004. Perini intends to continue to acquire well-managed, profitable firms to balance their organic growth.

AECOM: Operator of "blue chip" subsidiaries.

AECOM is the No. 4 provider of engineering services on *Engineering News-Record*'s list. It has aggressively acquired firms over the last 15 years to become a diversified portfolio of market leaders. AECOM remains employee-owned with global ownership by more than 5,000 employee stockholders. The firm has enjoyed outstanding financial performance and has a strong balance sheet. It has grown from a staff of 5,000 and $576 million in revenues in 1996 to 17,000 staff and $1.8 billion in revenues in 2004. (See Exhibit 5.)

As part of the corporate philosophy, AECOM positions itself as an acquirer or merger partner of choice: "a partner to pursue mutual objectives." Acquisitions have generally been successful companies looking for accelerated growth, the ability to maintain their brand/culture/autonomy, and management career opportunities

AECOM remains employee-owned with global ownership by more than 5,000 employee stockholders.

Exhibit 5

AECOM Recent Mergers

FY	Merger	Business Sector	Geopolitical Base
1996	Turner Collie & Braden	Infrastructure	Texas, Southwest
1996	McClier	Industrial Design/Build	National/Global
1999	Day & Zimmerman Infra.	Aviation PM/CM	National
2000	Metcalf & Eddy	Water/Wastewater	Global
2000	Maunsell Group	Transportation	Global
2002	Oscar Faber	Building Engineering	United Kingdom
2002	Meritec Limited	Diversified Engineering	New Zealand, Australia, Asia

in a broadened arena. All of AECOM's senior management has been developed from operating company mergers. One key to success has been adding strength through the right acquisitions rather than additional layers of "management resources."

The AECOM philosophy has been successful. It gives the company an advantage in acquiring quality candidates because they are telling prospective acquisitions what they want to hear — an opportunity and the ability to maintain autonomy. By contrast, Jacobs, can meet resistance since they are known to be hard integrators. AECOM's culture is also conducive to earnouts in deal structuring, which can bridge the pricing gap.

Skanska USA: From the portfolio to the single profit center.

Sweden-based Skanska, ranked the No. 1 international firm by *ENR*, built the most successful U.S. business of any of the internationalists over a 30-year period. By 2000, Skanska USA hit $6 billion in revenues and 2% pretax profitability. This was accomplished by acquiring successful companies opportunistically since 1981. The organic growth of subsidiaries was strong, and the 25 or so acquisitions operated as an "enlightened portfolio." Almost all management of acquired companies remained and grew in their careers. Stuart Graham, current president of Skanska AB, was a principal of the U.S. firm, Sordoni Construction, acquired in 1990. He is the first American president of a European firm in the construction industry. Each board of directors had members from sister companies, sharing best practices. Synergies were developed slowly and voluntarily. The headquarters office was the proverbial "man and his dog," with a president and a consolidating CFO. Overheads and support functions remained in subsidiaries.

As the portfolio companies grew, territorial disputes needed refereeing, and customers were sometimes confused by different brands. This became very obvious when a team was put together for a presentation involving a large multi-use project. There was a different company "expert" for each part: hotel, sports facility, shopping center, parking garage, infrastructure, and even prestressed concrete. The team never got beyond the introductions. The client could never understand that they were one firm and not a joint venture. Efforts to move toward one brand, one face to the customer, began.

With the delays of projects and margin erosions after 9/11, overhead became a serious issue. As companies were added, layers of management over functions and geographies grew. Silos developed in profit centers, discouraging collaboration and national customer service. By 2003, efforts were underway to reduce silos and profit centers. Support functions were centralized. For example, the company went from:

Integration philosophies may vary significantly, but acquisitions are a key element to every growth strategy.

- 45 enterprise servers to 5
- 24 remote access solutions to 1
- 26 independent data centers to 1
- 10 e-mail environments to 1
- 15 estimating platforms to 1

Major acquisition integration was implemented, and the organization is now evolving in accordance with the overall Skanska model of a “decentralized and integrated group.”

CONCLUSION

Integration philosophies may vary significantly, but acquisitions are a key element to every growth strategy. On balance, the acquisition strategies of major players have been quite successful — the major government market entry by URS and Jacobs, the rapid growth of AECOM, and the “transforming” of CB&I to a fully integrated EPC firm.

It is often said that the only real assets in a service industry are people. Regardless of the size and sophistication of firms as the engineering and construction industry consolidates, this still holds true. Sensitivity to people in the acquisition process is more important in E&C than in any other industry. Integration is an extension of culture and requires a very careful approach. ■

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The Journey to an Envisioned Future

With an envisioned future and the commitment to move toward this future state, your organization will have the direction and energy to create exceptional results.

By Colonel Arthur J. Athens and Tim Spiker

On May 25, 1961, four months after his inauguration as the 35th president of the United States, John F. Kennedy addressed a special joint session of Congress. During his speech, Kennedy spoke these memorable words: *I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth.*

With this visionary and ambitious statement, President Kennedy launched America on a journey that would find its fulfillment on July 20, 1969. On that day, Apollo 11 astronaut Neil Armstrong would leave the lunar module *Eagle*, resting at Tranquility Base, place his boot on the surface of the moon, and remark, "One small step for man, one giant leap for mankind."

Kennedy's envisioned future became reality because of the creative genius of numerous scientists and engineers, the organizational abilities of gifted leaders and managers throughout government and private industry, the financial and moral support of Congress and the American people, and the bravery of our astronauts. But we must remember that the impetus for this monumental effort was provided by one man — President John F. Kennedy — the leader who created a picture of the future in the nation's mind and inspired Americans around the country to achieve this seemingly impossible task.

Setting organizational direction, whether that organization is a nation or a family-owned business, is one of a leader's primary functions. Peter Drucker, a prolific writer and thinker about leadership and management for the past five decades, wrote in *Managing for the Future*, "The leader's first task is to be the trumpet that sounds a clear sound." Reverend Theodore Hesburgh, president emeritus of the University of Notre Dame, echoed Drucker's words when he stated: "The very essence of leadership is that you have to have vision. It's got to be a vision you articulate clearly and forcefully on every occasion. You can't blow an uncertain trumpet."

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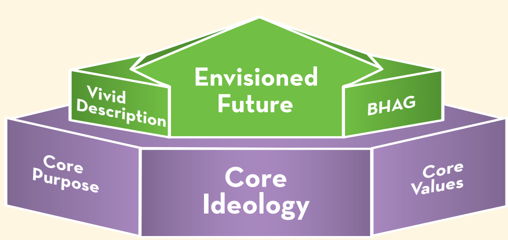
Merely speaking clearly and loudly, however, does not create an effective vision of what the future will be. Many aspiring leaders have made proclamations such as: "Five years from now, we will be a $2,000,000,000 organization," or "Two years from today, we will own a commanding position in our three major markets," or any number of other hopeful future realities. Bringing an envisioned future into reality requires two components: (1) the two essential elements of an effective envisioned future, and (2) the seven specific actions that fully support the achievement of that envisioned future. First, let's examine the two essential elements of an effective envisioned future.

In *Built to Last*, Jim Collins and Jerry Porras researched organizations that had created lasting financial success, or enduring organizations, to find the keys to their long-term success. Porras and Collins found that these enduring organizations defined their views of the future in a similar way. (see Exhibit 1). They defined their futures using "BHAGs" and "Vivid Descriptions." BHAG is a Big, Hairy, Audacious Goal. This is a clear destination that supports the organization's reason for existence (core purpose) and the ways in which it is committed to operating (core values). A properly defined BHAG is far from guaranteed to occur, but it is at least 51% believable to the organization. The other half of the envisioned future equation, according to

Exhibit 1
Enduring Organizations



Source: Built to Last, Collins and Porras research in *Built to Last*, is the Vivid Description — a motivational explanation of what the organization will look and feel like when the BHAG is accomplished.

HOW DOES A LEADER MOVE THE ORGANIZATION TOWARD AN ENVISIONED FUTURE?

Simply having an envisioned future — a well-developed BHAG and vivid description — does not guarantee success. While creating your organization's envisioned future can be challenging, the greater challenge is translating this vision into action. As Collins and Porras highlight in *Built to Last*, "There is a big difference between being an organization with a vision statement and becoming a truly visionary company."

Exhibit 2
Envisioned Future

Often, organizations work diligently on defining their futures, and then proceed on the journey of turning the envisioned future into reality only to find themselves distracted by both internal and external pressures. The hard work of giving wings to a mental concept that helps define an organization's future requires a leader to do more than write a statement and make an initial presentation to the organization. The seven steps in Exhibit 2 will help a leader avoid the shoal waters that can inhibit an organization's progress toward its envisioned future.

The first step, "describe the envisioned future" must be done first, but all other steps should occur concurrently.

Describe

Creating a picture of the future is an artistic process and does not lend itself to formulistic approaches. There are, however, some principles to consider when developing an organization's envisioned future.

Principle #1: Include others. Though a leader may come to an organization with a preconceived picture of the organization's future, he or she still needs to approach this process with patience and openness. The leader needs to listen to the key stakeholders and ask plenty of questions. Those questions could include: Where are the current points of concern or dissatisfaction? What is the organizational culture? What are the organization's strengths? What are the external trends? Where are the opportunities? When Warren Bennis and Burt Nanus studied 90 successful visionary leaders, they found that though "the leader may have been the one who chose the image from those available at the moment, articulated it, gave it form and legitimacy, and focused attention on it, [but] the leader only rarely was the one who conceived of the vision in the first place." This finding is a good reminder for leaders to remain humble in this creative process.

Principle #2: Study examples from other organizations. How others have described their future can help provide models as the organizational leadership synthesizes the strengths of their own organization and the opportunities on which they want to capitalize. When considering the BHAG element of the envisioned future, for instance, historical examples can be found in *Built to Last*:

- Boeing in 1950. "Become the dominant player in commercial aircraft, and bring the world into the jet age."
- Nike in the 1960s. "Crush Adidas."
- Stanford University in the 1940s. "Become the Harvard of the West."
- General Electric in the 1980s. "Become No. 1 or No. 2 in every market we serve and revolutionize this company to have the strengths of a big company combined with the leanness and agility of a small company."

Principle #3: Challenge the organization's status quo. An envisioned future should cause an organization to reach beyond its current capabilities and initially wonder whether the described future state is achievable.

Principle #4: Write a simple, concise, and understandable statement that captures the essence of the envisioned future. Sometimes, an image of the future comes quicker than the actual words to communicate it. Ultimately, however, the image must be captured in words that can be transmitted to and understood by everyone in the organization.

Communicate

Many organizations place their vivid description and BHAG on a couple of posters, hold meetings to brief the organization, and expect the passion for the envisioned future to ignite. It won't. The leader must develop a comprehensive strategy to communicate the future direction with variety, frequency, enthusiasm, and impact. Communicating the envisioned future is a lengthy process, not a 30-day program.

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Specific strategies that are particularly helpful in the communications process are:

- Use every possible forum to reemphasize the vivid description and BHAG, including award ceremonies, formal and informal speeches, e-mails, counseling sessions, etc.

- Use stories to help illustrate the envisioned future.
- Use Tom Peters' concept of "management by wandering around" (MBWA) to communicate the image of the future to individuals. This personal interaction helps connect the leader with his or her employees and provides an opportunity to talk about the path ahead for the organization.
- Flood the organization with visual reminders of the envisioned future.
- Remember that repetition is necessary to ingrain the message.

Live

The leader and other key ambassadors of the envisioned future must consistently live in harmony with the future image. Their words and actions need to correlate with the themes articulated in the vivid description and BHAG. When a manager communicates an envisioned future that has a component related to family values and then never holds family events, works his or her employees unreasonably long hours, and refuses vacation requests on a regular basis, the manager has demonstrated a disconnect between his or her life and the stated envisioned future. Hypocrisy will quickly destroy enthusiasm for the envisioned future.

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Abraham Lincoln is an excellent example of an individual who lived out the envisioned future he saw of "reuniting the Republic." The words he spoke, the decisions he made, and the priorities he set emphasized his commitment to this dream and demonstrated complete harmony between his life and strategic objective.

As Leslie Kossoft writes in *Executive Thinking*, "Consistency is equated to trustworthiness. One is trustworthy if one demonstrates the same behaviors consistently." And those consistent behaviors must be representative and supportive of the envisioned future.

Resource

The envisioned future cannot be just about words — it must result in organizational action. Personnel, money, information, time, and other resources must be aligned to support the organization's future direction. For most organizations, that means some activities need to be stopped; others must begin. The leader cannot concentrate only on the "big picture;" the leader needs to be involved in the details of execution, including the reorganization, budget, information-technology

> When I commanded a Marine Corps Reserve Squadron, our envisioned future was "to be a combat-ready unit with the tactical and technical proficiency to deploy individually or as a unit, and fight, win, and return." When I assumed command, we did not resemble that description. We looked good on parade and had solid administrative procedures, but we were not ready for combat. Once we established this envisioned future, we needed to use our preciously few drill periods to hone our tactical skills. Often that meant I had to place much lower priority on non-tactical events like Toys for Tots (a national charitable organization that distributes toys to needy children each year). Though I sometimes received criticism from my higher headquarters, when the unit deployed for combat operations, their success validated our commitment to a future different than the present and the resource decisions made to support that journey.
>
> — *Colonel Arthur J. Athens*

architecture, and other critical aspects of resource allocation. Every resource decision should keep the envisioned future in mind.

A leader needs to investigate all internal systems and structures (including thought processes and expectations) to check for alignment with the envisioned future. Leaders must ask themselves and others, "Are there any systems or ways of thinking that we utilize that could keep us from achieving our envisioned future?" Resource modifications in the area of compensation are the most difficult to make. They are also the ones that must be made most often — yet rarely are! The old business mantra "What gets rewarded and recognized is what gets done," really is true over the long haul. If leaders are not willing to modify compensation and other systems as a necessary step toward achieving the envisioned future, they cannot realistically expect to get there. Some individuals will sacrifice financially for the good of the organization's envisioned future in the short term. They will ignore how they are compensated for a season or two to do what is necessary to achieve the envisioned future, but they will not, nor should they, do it indefinitely. If leaders have any influence to modify compensation systems to drive and support the steps necessary to achieve the envisioned future, he or she must do so or risk losing credibility. This is especially true of top leaders in an organization. Owners and other top leaders must be willing to sacrifice a portion of the compensation they normally would have received to fund the new behaviors necessary to reach the envisioned future. If they are not willing to do so, then they are not committed to the envisioned future. Others in the organization will see this and begin to protect themselves during a time of misaligned organizational systems and goals. Rather than focusing people on the organization's envisioned future, people will be focused on survival and maintenance of personal gain.

If leaders are not willing to modify compensation and other systems as a necessary step toward achieving the envisioned future, they can not realistically expect to get there.

Properly resourcing an envisioned future is not only critical for successfully arriving at the envisioned future, it is a critical component to the leader's credibility during the course of his or her career. If a leader's actions, including resource allocation, do not match his or her words, not only will the leader and organization fail to reach the envisioned future, the leader will also lose the trust of his or her employees.

Leaders need to monitor their organization's environment to ensure their future pathway remains relevant.

Pursue

When a leader presents a challenging view of the future to his or her organization, resistance is natural. There will be some who are skeptical, some who are hesitant, some who will leave the organization, and some who will even attempt to sabotage the effort. The leader must, as Leslie Kossoft states in *Visionary Leadership*, "understand that, until others see what she sees, the dream may seem delusional to those who initially see and hear it." But leaders must not just understand this resistance; they must press on through it.

President Ronald Reagan provides a wonderful model for pursuing an envisioned future. For years before becoming president, Reagan was convinced of the evils of the Soviet Union and saw the possibility of actually winning the Cold War without having a major military confrontation. When he took office, his previous concept became part of his envisioned future — to defeat the Soviet Union and communism. His strategy became one of economic competition and direct confrontation with ideals, not bullets. Reagan called the Soviet Union "The Evil Empire;" at the Berlin Wall, he told the Soviet president, "Mr. Gorbachev, tear down this wall." At Moscow State University, he told the Russian students about the blessings of freedom. Through all of this, he was warned, ridiculed, denigrated, and opposed, but he stuck to his beliefs and the results were dramatic — the collapse of the Soviet Union and establishment of a free and democratic Eastern Europe.

Monitor

Leaders need to monitor their organization's environment to ensure their future pathway remains relevant. Certainly, once an envisioned future has become reality, like the landing on the moon or the defeat of the Soviet Union, the time has come to establish a new direction. But what happens when the environment changes — when a new enemy emerges or a new technology changes the face of an industry? Leaders need to stay attune to the environment through reading, listening, thinking, and networking to monitor the match between the organization's trajectory and the influential events occurring around them. As Collins and Porras point out in *Built to Last*, "A highly visionary company displays a powerful mix of self-confidence combined with self-criticism."

Celebrate

Leaders can often be so caught up in the pursuit of the future, they forget to pause and enjoy the victories along the way. Celebration and recognition is important for any organization. Leaders need to showcase individuals whose accomplishments are illustrative of the envisioned future. NASA did this well in the years before the moon landing. NASA celebrated each step that brought the nation closer to the vision's accomplishment; they did not wait to celebrate until the first steps on the moon.

FINAL THOUGHTS

An envisioned future provides focus and energy for an organization. An envisioned future is appropriate for every type of organization, at every level.

In January 1986, NASA was an organization adrift — complacent in its routine of space shuttle launches and recoveries, embroiled in tension between manned space flight and scientific exploration, and devoid of a uniting vision. On the 28th of that month, STS-51-L, the Space Shuttle *Challenger*, launched at 11:38 a.m. from Pad 39-B at the Kennedy Space Center in Florida. Seventy-three seconds into flight, the shuttle exploded, and seven crewmembers "slipped the surly bonds of earth to touch the face of God," as President Reagan would later describe the tragedy in a speech to a shocked and saddened nation.

After this incident, I had the honor of serving with NASA as the Special Assistant to Dr. James Fletcher, the NASA Administrator. During my tenure at NASA, I observed the process of defining an envisioned future and moving an entire organization towards that depiction.

Dr. Fletcher and his leadership team **described** the envisioned future as a "Return to Flight"—preparing the space shuttle to fly again, as soon as possible, but safely and efficiently. Dr. Fletcher **communicated** this description through speeches, written correspondence, press interviews, banners at all the NASA centers, and a relentless call to the workforce to help America get back into space. Dr. Fletcher and his leadership team **lived** in harmony with their stated direction as they supported NASA safety officials, astronauts, and engineers in their pursuit of new designs and procedures and demonstrated an unrelenting commitment to integrity. Dr. Fletcher **resourced** the process by bringing in the most qualified individuals to run the shuttle program and reprogramming funds to ensure money flowed into the manned space program. Dr. Fletcher **pursued** the envisioned future by overcoming critics, an often hostile press, political pressures, and unexpected setbacks. Dr. Fletcher **monitored** the environment to ensure "returning to flight" was the right future state for NASA and that outside influences had not changed the prospects of returning the space shuttle to an operational status. Dr. Fletcher **celebrated** the victories along the way by acknowledging the incremental accomplishments — the redesign of the O-rings, test firings of the shuttle rockets, redesigned safety procedures, and much more.

On September 29, 1988, the Space Shuttle *Discovery*, STS-26, lifted off from Kennedy Space Center at 11:37 a.m. NASA had returned to flight. Though the time between envisioning the future and success was shorter than most organizations will experience, the space shuttle flew again because Dr. Fletcher and his leadership team understood the requisite steps to make an envisioned future become a reality.

— *Colonel Arthur J. Athens*

Leaders must remember that the responsibility to identify and describe the envisioned future and establish the pathway to reach this future ultimately resides with them. Perhaps, as Peter Drucker and Father Hesburgh claim, this is a leader's foremost responsibility.

Does your organization or team have a compelling envisioned future? If not, is a future destination being considered and described? If you do have this compelling picture of the future, are leaders communicating the description? Are leaders living in harmony with this envisioned future? Are organizational resources being aligned for the journey? Are leaders pursuing the envisioned future with diligence, monitoring the environment for exceptions, and celebrating victories along the way? Without an envisioned future, your organization will drift with the tide and currents of change. With an envisioned future and, most importantly, the commitment to move aggressively towards this future state, your organization will have the direction and energy to create exceptional results. ■

Without an envisioned future, your organization will drift with the tide and currents of change.

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Getting Your Strategy Under Sail

Your strategic implementation plan will not have traction without focusing on people, roles and responsibilities, resources, reward systems, and measurement systems.

By Ken Roper and Jerry Jackson

The greatest organizational obstacle to the success of your new strategic plan is your past success. Most executives would consider their past success their greatest advantage. However, if your new strategic plan aims for a strategic shift, then almost by definition, it means that you are going to lead your company in a new direction. That means doing many things in new ways. It is like learning something totally different such as sailing small boats.

For instance, one of the first things you learn when you take control of the tiller, is that if you want to turn left — tack to port, in sailing jargon — then you need to push the tiller to your right or starboard. If you stubbornly stick to what you know about driving cars or steering ski boats, you will be off course and may soon run aground. Imagine that your whole crew is made up of neophyte sailors who know nothing about sailing or its language. You will suddenly discover the futility of simply barking out orders. It won't be long before your lines are snarled, your sails are luffing, and your crew is both exhausted and frustrated. However, if skipper and crew take the approach that they are going to work to learn new skills, a new language, and enjoy the learning experience, then the result can be acquisition of new skills, arrival at a new destination, pride in accomplishment, and fun in the process.

A key attribute of skilled implementers is that they know how to secure resources and enlist support from internal and external sources where required.

ASSEMBLE THE RIGHT CREW

Whether you are the skipper of a sailboat, the owner of a football team, or the president of a company, you soon learn how important it is to have the right people onboard. We stress the importance of choosing the right people when we help our clients with implementation of strategy. It is extremely difficult to achieve A+ execution of strategy with B- people.

There are some guidelines and characteristics you can follow when choosing the right people. For example, Payton Manning, quarterback for the Indianapolis Colts, is reported to have **superior leadership skills** and an **excellent work ethic** consisting of personal discipline, detailed and meticulous standards for preparation, and what reporters call a **"joy for the work."** This enthusiasm generates momentum in the Colts' organization. For forward momentum, people must be motivated by progress and fear of the status quo. Companies mired in past success embrace status quo even though they willingly set ambitious new goals. However, they find actual change difficult to achieve.

A key attribute of skilled implementers is that they **know how to secure resources** and enlist support from internal and external sources where required. Rather than being personally buried in projects and assignments that are unmanageable, the best strategy implementers recognize the need for resources and solicit them early in the process. They are **forward thinkers.**

Having people with the right talent, fit, and attitude is critical. But crew composition isn't the only key to success.

Many people believe that having come up with the right strategy, all they have to do is launch it and success is certain. Most people would not buy a new yacht and assume knowledge of how to sail it, nor would they buy a struggling football team and expect a winning first season. Why then would business leaders assume that conception of new strategy equals implementation of that new strategy?

Having the right crew in place is just the beginning. To put your strategy on a successful course, you have to plan and manage the change process.

A general contractor, seeking to reposition from a dependence on public work to a niche market in reimbursable, private work, recruited and hired a business developer skilled in that niche. However, the rest of the organization was not prepared. The historical adversarial behavior of the field toward clients continued. The premise to the new, negotiated client of "customer intimacy and high customer satisfaction" meant something only to the business developer and one or two senior managers. No translation of what this meant was put forward to the crew that had to deliver this promise. Was the strategy shift successful? What do you think?

EMBRACE CHANGE; OVERCOME THE INERTIA OF THE STATUS QUO

Companies remain at rest or continue in the same old straight line unless acted on by a directional force. Whether you are leading the company or leading an implementation team, you need to be the directional force that drives essential changes so that the direction of the company is on a new strategic course. Organizational memory opposes trying out new things. Past success is an obstacle to future prosperity.

Setbacks will occur, and new obstacles will present implementation challenges, but the **power of conviction** is needed to sell your strategy to others in the organization. Persistence means building an uncompromising determination to achieve results using new strategy. Successful strategy implementers have a history of follow-through; they are not just skilled in hatching new ideas. Individuals who have a history of poor follow-through when taking on new or additional assignments are not good candidates for strategy implementation.

Consider the design professional noted for her work designing strip malls. She has done her research and noted that the "graying of America" is creating a growth market in assisted-living facilities. Changing tack to break into the new market will take time, though. Meanwhile, opportunities to design new work and retrofits for shopping centers continue to fall her way. Does she stick to her new strategy or continue to fill her backlog with the same kind of work on which she built her reputation? Even when the historically successful work is in a declining market sector?

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Clearly, the easy short-term solution is to default to the trusted legacy work. However, what is most profitable in the near-term can be detrimental in the long-term. For example, in the early 1980s, IBM chose to ignore the growing market potential for personal computers. That decision was costly and proved a serious setback for the inertia-bound, market giant known as "Big Blue." The status quo is seldom a permanently successful strategic position even for the conservative construction industry. For a roofer to elect to continue his service offering of only new, built-up roofing when the market clearly demands multiple roofing systems and plenty of re-roofing opportunities, maintaining the status quo is unnecessarily expensive. When winds or tides change in the marketplace, "Prepare to come about," as they say in sailing.

That's a preparatory command of the helmsman. On the command of execution, "Hard alee," (some of this sailing jargon is pretty arcane), the helmsman puts the wheel or tiller over, the helm begins to respond, the crew lets the jib backwind a bit, and prepares to haul in the jib-sheet on the opposite winch. The boom swings across. The windward jib-sheet is released, the leeward jib-sheet is tightened, and the craft gains way on the new tack. Easy enough in a sailing vessel. But what about changing the company's tack?

Consider the extent of what must be changed. Are the changes mainly structure, processes, and information? These mechanics usually just scratch the surface. Are changes also being demanded to accomplish shifts in values, mindsets, and capabilities? These are much more profound. Change-management efforts may be revolutionary and dramatic such as those sought through business-process reengineering, or the changes may be more incremental and evolutionary, and attempted through such methods as Kaizen. Dr. Wilfried Krüger[1] describes the "Change Management Iceberg" as being one of issue management (top of the iceberg). Below the surface, are two more dimensions of change and implementation management, involving management of perceptions and beliefs and management of power and politics. In dealing with the subsurface conditions, Krüger identifies opponents and promoters and aims to flush out the hidden opponents (opportunists who superficially support the change, but are generally negative toward the change) and capture the potential promoters (ones who are generally positive toward change, but are not yet convinced about this change).

Managing change is a permanent task for leaders and presents episodic challenges for general management.

Managing change is a permanent task for leaders and presents episodic challenges for general management. After all, the reason of being for leaders is to enable change whereas the corollary for managers is to achieve constancy.

Another change management notion is that Dissatisfaction (D) must exist or be created, a Vision (V) of the changed state must be clear and compelling, and achievable First Steps (F) must be executed toward realizing that Vision in order to overcome the Resistance (R) to change. $D \times V \times F > R$

Implementation of this change model (Gleicher, Beckard, and Harris[2]) has led a number of companies to capitalize on the dissatisfaction of current-year losses, high turnover, morale decline or others, using that opportunity to prompt a process of vision-building by the organization's leaders. Subsequent action plans aim to create achievable first steps toward that vision.

From an organizational development standpoint, most employees desire to move their organization forward and respond well to involvement in an organized change process. However, superficial employee involvement without subsequent substantial change may well produce reactions ranging from remorse to explosive anger. Consider our sailboat skipper asking the crew, "Where would you like to go today?" After soliciting crew input, the unwise skipper discards all suggestions and announces her previously determined port-of-call. Reactions among the crew might range from surly to mutinous! Carefully handle requested employee input. Today's workers do not appreciate being patronized, and then ignored.

A design firm conducted an extensive employee survey. Organizers of the survey found the results interesting and, in some cases, inflammatory. Because of the surprisingly low scores on some of the topics, senior management decided to "stonewall" the employees who asked, "How did we do?" Further, management's stonewalling continued when the employees asked, "What is going to be done differently as a result of this survey?" Morale suffered, turnover increased, and employee voluntarism sank to negligible levels for several years.

It is a good rule not to ask for employee feedback unless you are willing to share both the bitter and the sweet with the participants. Further, explicit action should always follow unsatisfactory survey results. Employee involvement can be used again by asking some of the respondents to participate in problem-solving teams. Empowerment in problem-solving must be real, not illusory. Otherwise, results may be even more disastrous than stonewalling, for now additional investments have been made by employees. Without explicit action, the perceived waste of effort can produce real anger from employees who actively participated.

John Kotter[3] suggests six change approaches that can make the job of implementing new directions less difficult. First, education and communication should be upfront and continuous. Once is never enough. Employees confronting change as a company shifts its strategic direction need education not only on the change itself but also on the very nature of organizational change. They need to know what to expect. They should anticipate emotional responses in themselves and others. They need coping tools. And, they need these lessons more than once. Second, employees are more likely to buy-in and understand the shift in strategy if they have early participation and involvement. For the planning team to go up on the mountain, "discover" the new direction, then come down and inflict it on the masses is not an appropriate process for the 21st century. Third, employees are going to have fear and anxiety. Leaders and managers need to be prepared with tools to help employees deal with these concerns and

Employees confronting change as a company shifts its strategic direction need education not only on the change itself but on the very nature of organizational change.

feelings. If skills cannot be provided to all supervisors, then a skilled human resources professional can do much to fill this gap. Anticipation of this need was all it took for one large subcontractor who was teetering on the brink of hiring a professional human resources administrator to go ahead and make the hire. Retrospectively, the services of this individual in facilitating change management was, alone, worth the cost of this position for the first two years.

Fourth, expect to negotiate in order to gain agreement. By providing incentives to accept change, resistance can be overcome more quickly. Even symbolic, low-cost awards can be valuable in recruiting early adopters of changed processes (a new version of performance reviews, for example). Fifth, sometimes manipulation and co-option will be required such that early resistors are used to fill change management roles. This manipulation can backfire and actually raise resistance if the involvement is seen as gamesmanship or patronizing. Finally, you may have to use explicit and implicit coercion to get the traction that is needed for the new approach. If speed is essential and resistance is great, clearly connecting promotion opportunities to embracing the change (moving to the new office, for example), transferring resistant staff to less critical roles (with concurrent loss of status), or outrightly terminating social leaders who are obstructionists (with thoughtful explanation to the survivors) may be needed.

TO IMPLEMENT, MOTIVATE

Fear is a powerful motivator, but the fear of change may trump the punishment for not changing. The power of fear of change has been powerful enough to stop many strategies before many people in the company even learn that there is a new strategy. Overcoming complacency and defeating the fear of change requires leadership, enthusiasm, and confidence in future results. Forward thinkers can see through these barriers. They are anxious to see the new strategy at work so they hit the ground running and generate momentum. Once the company charts a new strategic course and gets underway, it is far easier to keep it on track, focusing on fine course adjustments en-route.

Overcoming complacency and defeating the fear of change requires leadership, enthusiasm, and confidence in future results. Forward thinkers can see through these barriers.

Replace de-motivators with positive incentives. Ask, "What's in it for me?" from the point of view of the people you want to motivate. Trying to make your vision their vision is not always enough. Perhaps you see yourself as the head of a growing company in five years, but others may just see more work and reduced recognition in the larger company. You see growth as essential for retaining key people. Others see growth as unnecessary and inherently risky in flat or down markets.

Without a personal payoff in the announced change of course, many employees are highly reluctant to change direction. The common all-hands meeting announcing the new strategic direction actually produces little evidence of short-term shifts in thinking or behavior. People generally respond to their own motivations and tend not to have the same stimulus-response that we might expect in a given situation. Creating a visual picture with "their" payoffs connected to "their" contribution is vital to implementing the new strategic plan. If you are unable to identify the personal payoffs for employees, you may want to rethink your plan to include the answers to what's in it for all of the company's employees.

Without a personal payoff in the announced change of course, many employees are highly reluctant to change direction.

One savvy chief executive took it upon himself to conduct a serious one-to-two hour coaching session with every key employee. More than 40 such sessions were conducted. In every case, the aim was to make sure that the vision was clear, that the employee had a solid answer to the question, "What's in it for me," and the employee had a realistic appreciation for what changes were likely in the individual's roles and responsibilities as a result of this change. Preparation for these sessions took almost as much time as the coaching session itself. When asked, "Where do you find the weeks needed for these sessions?" the CEO responded, "What is my job if not this?" Good question.

Once you have established explicit motivators for key people called upon to implement the strategy, provide reinforcements. High positive feedback for correct behaviors is one of the best reinforcements. Two ingredients are required, however. Employees must understand the expectations, and supervisors must be alert to good behavior. Insofar as expectations are concerned, don't expect employees to get those from memos or procedure manuals. Much time has been spent by companies developing explicit written procedures that nobody reads. This is not just a matter of insubordination; it is just that no one reads instructional manuals these days. Consider how much time you have spent reading documentation for the latest software on your computer. Written rules don't bring about change; training, coupled with good supervision, positive feedback, and recognition for the right behaviors are the keys. High positive feedback is always preferable, but if you are to instill accountability, negative consequences for poor behavior must exist as well.

Some implementation can be systematized and on "auto-pilot," by creating self-reinforcing systems. For example, to ensure that all customer surveys and post-project reviews result in scores above a certain minimum level established in the strategic plan, withhold incentive bonuses for scores that do not meet the threshold criteria. Talk about putting your money where your mouth is! Expect pushback from project staff as you try to implement this system. Simply because pushback occurs doesn't mean that this is a bad idea. It simply means that you have resisters to change. How will you handle them?

A key tool in implementation is the use of detailed action plans with individual assignments and completion dates for each action item. Track progress milestones, and use the action plan as a tool for discussion at all management meetings where the key players stand-and-deliver reports of progress. The use of action plans and milestones greatly enhances accountability. By conducting public stand-and-deliver sessions, you can use peer pressure to motivate action. The reverse is also true. If peers begin missing their dates and non-performance becomes acceptable, then the action plans and the stand-and-deliver sessions are doomed.

The organization must be able to pat itself on the back, and we must be able to pat employees on the back for their contributions and achievements.

IF IT MATTERS, MEASURE IT

Our choice of what to measure sends messages to our people. It should be clear that your new direction matters; otherwise, why spend time, effort, and money to pursue your strategy. Strategies exist to accomplish goals. Achievement of objectives along the way represents progress toward goal accomplishments. Rather than objectives, some companies use key indicators to track progress. Other good terms include "key success factors" or "strategic measures" or "strategic metrics." Some recent approaches combine measures to create "Executive Scoreboards" or "Balanced Scorecards." The measurement method fits the company culture, and the way the company wants to communicate with its employees. Virtually every successful strategic framework has an element of measurement. Measurement is another form of positive reinforcement. The organization must be able to pat itself on the back, and we must be able to pat employees on the back for their contributions and achievements. Without measurement, these pats are nothing more than hollow "attaboys (and gals)."

Key measurements focus efforts on achievement of the right results, so when developing "scoreboards," understand the core of what you are trying to achieve and determine what measurements will let you know when your plan is working. Clarity and focus of key measurements enables visualization of the result or deliverable that comes from successful implementation. An example of this technique is the use of prominent signs on job sites depicting the number of days without an accident or reportable incident. Companies find that these signs are effective in keeping job-site safety awareness at high levels. Key measurements are the GPS waypoints in our course toward strategic change.

REWARDS AND CONSEQUENCES

We often hear managers say that their organization lacks accountability. Successful implementation requires clearly defined metrics and associated performance metrics tied to rewards. Bonus and incentive plans vary significantly, and plans must be designed carefully to avoid driving the wrong behaviors, i.e. focusing on job profits at the expense of customer satisfaction. Another challenge for incentive plans is that strategic plans are long-term and take time to produce results. The best incentives, however, are measured and paid in the short-term. This can create a disconnect between execution and reward. Over time, your key players may know and trust that the rewards will be there, but you will gain more traction with realistic interim milestones and incentives based on those rather than simply based upon the end-game.

When employees receive bonuses for their performance, winning becomes contagious. People realize that they are creating their own future and sharing in the fruits of their successful efforts. The consequences of performance-based incentives can range from embarrassment by not having assignments completed when results are announced in group meetings, to terminations where warranted by continual poor performance. Effective reward systems produce accountability for performance and enable consistency in monitoring progress.

CONCLUSION

Strategic planning is an ambitious undertaking but the most important element lies in the implementation phase. Plans without action are worthless. Successful implementation gives you a sustainable competitive advantage over the competition. Your implementation plan will not have traction without focusing on people, roles and responsibilities, resources, reward systems, and measurement systems. When an implementation plan gains momentum, companies find it easier to sustain that momentum. Successful companies attract better people and better customers. The most difficult part of the implementation plan is getting started. Like learning to sail, once you have mastered the basics, you'll wonder why you ever thought it was difficult. ■

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[1] Krüger is deputy chairman of the German Society for Organization (GFO) and has been associated with University of Dortmund, University of Berlin, University of Mainz, and guest professor to Kansas State University.

[2] David Gleicher postulated this model for change when he was with Arthur D. Little. Dick Beckhard of Beckard & Harris and others have popularized this approach for dealing with change.

[3] Kotter is a Harvard Business School professor who has written extensively about achieving change in organizations, as well as numerous books and articles on leadership.

The Salesmantendent: The Emerging Role of the Project Superintendent

By demonstrating a business development mindset, superintendents have the greatest ability to improve the project's performance and the firm's backlog.

By Gregg M. Schoppman

The front line. Hardened infantry and impenetrable armored divisions assume tactical positions. Analogies are often drawn between the front line of a war-torn battlefield and that of a construction project. More specifically, the stereotype of the construction superintendent is that of the rigid, field general with the demeanor of Patton and the social graces of Genghis Khan, barking orders to his/her troops.

Subcontractors, suppliers, laborers, foremen, and operators either fall into their ranks or line up on the opposing battle line. Aggressive, "old school" superintendents take the perspective of "it's us vs. them." In the heat of battle, subcontractors, suppliers, and unfortunately, the customers tend to fall victim to the aggressive and unrelenting assaults of the superintendent.

Regardless of the industry, the customer should always be the focal point of the transaction. The customer pays for the services of the contractor, and their needs are paramount. However, contractors will sometimes argue that they perform little negotiated work, thereby justifying their flippant attitude toward the customer. "Who needs customer service? If we are low next time, they'll use us again." While there may be some credence for this mentality, trends indicate that procurement methods are moving more toward value-based prequalification and award. Placing less emphasis on "low bid" and more on project quality, communication, and team experience is becoming commonplace, even within public, institutional, and government entities. What does this mean for firms that have made lifeblood of hard-bid work, managing and supervising projects with the same "carnivorous" instinct that has served them for 20 to 30 years? More importantly, what happens to the veteran field general?

More often than not, the attitude that permeates many construction firms is that the project managers and salespeople in the office complete the project rather than the men and women in the field. The field is viewed as merely a cog in the construction machine that helps generate revenue. The truth is: the field is not merely a cog, but the very center of the construction firm's universe. Furthermore, sales or repeat sales, the holy grail of every sales development staff, may be generated from the office, but they are carried out in the field. Thus, the conundrum: How do we increase sales with repeat clients through superintendents who fail to recognize the customer and solve their problems?

> **The construction industry can learn many lessons from other industries that have expended resources to reach and serve the customer at the "field level."**

THE SALESMAN SUPERINTENDENT

The construction industry can learn many lessons from other industries that have expended resources to reach and serve the customer at the "field level." Retail firms such as Starbucks, Target, and Home Depot have instilled an entrepreneurial instinct in their associates. For example, Home Depot management has ingrained in their associates the importance of the customer. Floor associates will not only greet the customer, but will also stop what they are doing and escort customers to their desired product. How can this same attitude correlate to a construction project? Many times, construction firms view the customer as an impediment — an impediment who will ask silly questions, waste precious time, and distract from building the project. Superintendents tend to embody this attitude and manifest it in their actions and words.

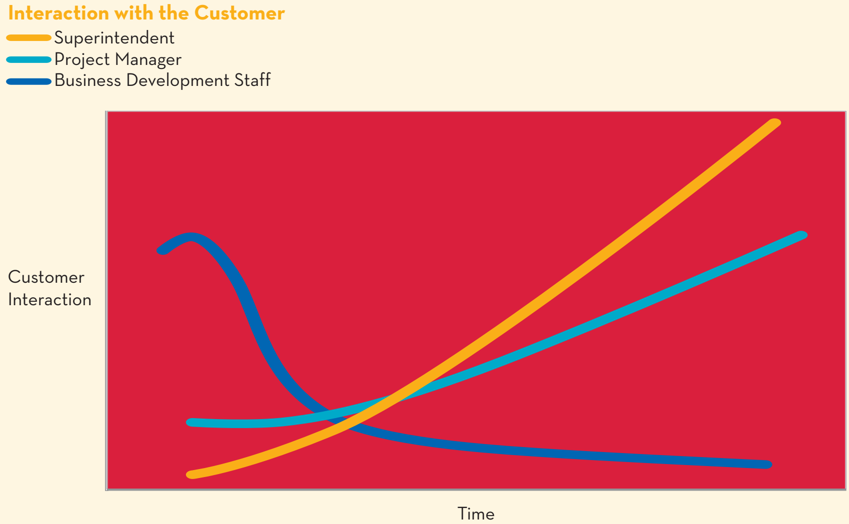
It is amazing to hear some typical superintendent responses such as: "I couldn't get anything done today. The customer never left my side the entire afternoon. It drove me crazy! I have a building to build, and he spent the day asking me silly questions." Is this the attitude that a company should have when describing its customer? Business developers would salivate at the opportunity to spend days with their customers. Ordinarily, they would have spent six to 12 months cultivating a client relationship, learning their business, and learning their idiosyncrasies, all for the sheer hope of spending an hour at lunch to discuss a potential project opportunity. Thousands of dollars and countless hours are spent for a lunch and a mere possibility of work. On the other hand, our misguided superintendent has spent six to eight hours of "quality time" with the customer and acts as though he has endured a tortuous agony. The old adage — it costs more money to find a new customer than it does to retain one — has never been more true. Exhibit 1 illustrates the interaction between the customer and a construction firm's personnel.

Yet, why do many firms fail to capitalize on this opportunity? A firm's management usually seeks entrepreneurial project managers. Firms that stress this same instinct in their superintendents are more likely to reach their goal of repeat clients as the source of their greatest volume and profitability since superintendents are closer to the customer.

Communication drives a successful project. E-mails, voicemails, two-way pages, radios, and cell phones offer many opportunities for effective communication. Nonetheless, the majority of our communication is reactionary and serves to extinguish the fires that arise. The "old school" superintendent is a veteran firefighter. Conversely, a *salesmantendent* is a master of proactive communication. This doesn't mean just calling or e-mailing when there is a problem. Proactive communication means keeping the customer informed long before a problem creeps up. "Mr./Mrs. Customer, I wanted to let you know that we erected the last two tilt panels this morning." Or, "Great news! We completed the roof this afternoon, and we are a week ahead of schedule." The power of positive news has an impact that is irreplaceable to firms that rely on repeat business. The message delivered by proactive communication is that the *salesmantendent* is on top of the project. The customer can rest assured that their investment is safe and secure.

Exhibit 1

Interaction with the Customer



While not every problem is the contractor's or subcontractor's fault, it is incumbent on the superintendent to take ownership of the project and act is if the problem was his own.

This type of communication is easy. In the world of construction, the good news is often dwarfed by the "not-so-good-news." Everybody loves to be the messenger of good news. Who likes to be the harbinger of bad news? This is another area where the old-school field general falls down. Sometimes, these generals clam up, do nothing, and hope the problem will go away. They are paid to build a building, not to be caught up in the soft side of construction and stroke a customer's ego, right? Or worse, they convey the "bad news" with the same eloquence of a messenger delivering a telegram. "Mr./Mrs. Owner, we are four weeks behind because of the rain." Or, "The fire marshal shut us down because of *your* architect's design." Great! It's the customer's design now. When the project was going well, it was our project. At the first rock in the road, it is the customer's problem. The line across the battlefield begins to be drawn. While not every problem is the contractor's or subcontractor's fault, it is incumbent on the superintendent to take ownership of the project and act is if the problem was his own. A superintendent who can give a customer bad news with a great solution generates repeat business. "The fire marshall shut us down for not having the proper egress on *our* plan. After reviewing the building code with him, he has agreed that we are in compliance if the architect makes the change on the egress plan. There should be no cost for this, and it will solve the problem. Is that acceptable?" By showing superior construction acumen, the *salesmantendent* solves a customer's problem. Additionally, the *salesmantendent* develops a bond with the customer that no other salesperson in the firm can duplicate. Solving the customer's problems creates loyalty and trust. Why would a customer go to a competitor when they have a superintendent with whom they have such rapport?

IMAGE IS EVERYTHING

Construction superintendents tend to be "hands on," process-driven people. They understand the elements that create a building and how they sequence together to build a structure. They can put their heads down and bull through a project as a team of oxen plows through a field. They see the end result — a school, a factory, an office, a warehouse, a bridge. Superintendents who are goal-driven tend to be very successful. They have adopted Stephen Covey's mantra of beginning a project with the end in mind. However, superintendents who charge forward with the single priority of finishing each task regardless of their surroundings, fail to see critical customer service opportunities. Their myopic supervisory strategy focuses on what they think is important rather than what the customer thinks is important. Recall our earlier example of the frustrated and misguided superintendent who was irritated at having to extend hospitality to his customer during a recent visit. What would be the consequence if a Home Depot associate grumbled and aloofly responded when asked where a power tool was while he/she was stocking a shelf? The customer would feel put off, not wanted, and may make the decision to shop at a competitor. A construction customer is not very dissimilar. Much can be read from the body language of the superintendent. By extending a deep passion about their project, a superintendent conveys a message of "We care" to the customer. If it wasn't for the customer, the superintendent would never have a project to be "distracted from."

In many instances, customers do not possess the same intimate knowledge of construction methods and processes as the management and supervision of the construction firm. They come from different backgrounds and are more focused on their own products, processes and bottom line. A surgeon building a medical center understands medical science but may not understand the science of structural engineering. A superintendent offers the opportunity to educate a customer. The *salesmantendent* is the delivery mechanism. The passion with which they educate and inform the customer says a great deal about a firm's commitment and drive. The customer sees first-hand the embodiment of what was sold during the proposal phase — delivering on a promise.

There is direct correlation between the attitude of the superintendent and the image of the jobsite.

There is direct correlation between the attitude of the superintendent and the image of the jobsite. A positive, proactive customer service salesmantendent will exhibit many of the following features:

The "Selling" Jobsite — *Salesmantendents* understand that the customer may visit. They also understand that a customer's customers may visit. How welcome they feel, how they are treated, and how the site looked during that visit has a great impact on their perception of the superintendent and the firm as a whole. A salesmantendent understands that if the customer's customer is happy ... their customers are happy.

The "Telling" Trailer — How a person lives tells a great deal about a person. A job-site trailer tells a great deal about a superintendent. Organization and cleanliness not only present an air of professionalism, but they also exhibit an inviting atmosphere to the customer. A trailer that looks more like an office and less like, well, the stereotypical construction trailer tells a great deal about a construction firm.

The "Safe" Environment — The importance of safety has become more and more prevalent in recent years. Many firms preach about safety, but fail to live the sermon.

Superintendents that demonstrate a commitment to safety convey several messages. Customers also see this dedication through the quality and schedule as well. Most importantly, a customer appreciates the efforts in not developing a stigma that comes because of an accident.

The "Productive" Methodology — We have all seen it. Twelve men with hands propped on shovels gathered around an excavation jabbering about Sunday's game, doing everything but working. What image does this send? Does the customer see crews needlessly wasting time and their money? How does a superintendent prevent this scene? The root of the problem does not lie with the employee, but with the superintendent's inability to give the plan to the men. Great superintendents set their teams up to succeed through planning and communication. Through these mechanisms, customers see productivity and not inactivity.

People like working with people with whom they have a positive relationship. By the end of the project, the superintendent has had the most opportunity to be with a customer. Has the opportunity been lost or seized? The opportunity for repeat business hangs in the balance.

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THE SUBCONTRACTOR SALESMANTENDENT

Throughout this article, we have used the term customer almost exclusively to represent the property developer, office manager, facilities director, construction manager, owner, etc. But why does customer service have to stop at the general contractor/owner boundary? The construction industry does not have a great surplus of customer service stories across its great history. Think back to our example of the field general barking at the subcontractors. The general contractor/subcontractor relationship is truly one of the most intriguing examples of a dysfunctional partnership in business today. Never have two groups of people been so reliant on one other and yet still managed to conduct their affairs with such disdain for one another. There are those subcontractors that think, "Why bother to give good customer service — they'll bid us against eight other mechanical/electrical/painting subcontractors on the next project anyway." Or, "The general contractor will beat me out of my rightful change orders, pay me 50 cents on the dollar for them, and then act like I am cheating it. Who needs it — treat 'em all the same way they treat us — like dirt!" These are the prevailing attitudes on many jobsites. This is a cancerous attitude that compromises the foundation of the customer service model. As trends towards negotiated, alternative delivery projects increase, customers will look toward a project team, rather than a general contractor and 20 trade contractors. The subcontractors that are "best in class" will rise to the top of every list. The customer service a general contractor's superintendent deserves comes in the form of effective communication and productivity. Neither one of these costs anything, but the dividends they provide are priceless.

Trade contractors' ability to influence customer service is profound. For general contractors that are ultimately dependent on subcontractors, trade contractors are extensions of the promises made with the primary customer. As a result, a subcontractor *salesmantendent* has a direct influence on a project's delivery. The same traits that defined a general contractor's salesmantendent will describe a subcontractor's salesmantendent. The ability to be proactive, the ability to be a problem solver, the ability to plan, and the ability to communicate are just a few traits that the new generation of trade superintendents should possess. A project that is comprised of a corps of trade *salesmantendents* will not only create a successful project in schedule and financial terms, but will also create many successful long-term relationships.

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Productivity provides a means to improve a firm's overall profitability by equipping a superintendent with tools to enhance communication and consequently, arm the crews with the information to get their scope of work done. *Salesmantendents* use productivity to not only help themselves, their crews, and their firm from a financial perspective, but also as an effective business development tool. Getting the work done in a quality, timely, and efficient manner will not only make money for the firm, but also provides a memorable experience for the general contractor. The general's superintendent can better plan the entire project and deliver higher quality results for customers. By being productive, the subcontractor *salesmantendent* solves the general contractor's problems. Using productivity not only will keep you competitive, but also provides you an element to further differentiate you from your competition.

In the same method that a tradesman learns ductwork, wiring, concrete placement, roofing, and carpentry, soft skills like communication and salesmanship are learned through practice, repetition, and discipline. They are taught by the firm's management, the foremen, and other superintendents. People learn from the examples set by their peers and superiors. Trade contractors staffed with *salesmantendents* tend to find a dramatic increase in the requests for their services. More often than not, they are too busy doing work rather than bidding it. What a novel concept — being awarded work based on the talented staff you employ and the experience you have gathered rather than by a low margin, high-risk proposal.

AN ARMY OF SALESMANTENDENTS

While most contractors, general and trade alike, would agree that they need strong, proactive *salesmantendents* with outstanding interpersonal skills, the vast majority settle for the tyrannical field general. "Well, he/she gets it done," or "He/she is a bulldog, not much on finesse, but we never have to worry about them not finishing a project." Winning the race is important, but being able to race repeatedly is also critical to a construction firm's success.

There is no question that the quantity of qualified supervision and management is in short supply. In light of this fact, it is imperative for firms to train and cultivate superintendents in the art and science of business development. Budding *salesmantendents* will learn their greatest lessons from the mentors they are emulating. *Salesmantendents* recognize the customer as something more than a "one-hit" wonder. Our old school superintendents feel the customer is a distraction and that business development is "the job for the office." These individuals are a detriment to the organization.

Training the rookie superintendent and retooling the veteran is a critical task for management. Unfortunately, not everyone will grasp this skill set. Some superintendents are the most dynamic tacticians in the realm of operations, but fail miserably at adopting a strategy of being customer-centric. Management must decide whether this person fits with the firm's overarching strategy. If the construction firm is to continue to pursue working in the negotiated market, thus placing a heavy reliance on repeat business, management needs to staff the organization with superintendents who possess the same values. Retention of even one antiquated superintendent will only serve to undermine the trust and camaraderie the other customer-service-oriented superintendents have worked so hard to build.

Retention of even one antiquated superintendent will only serve to undermine the trust and camaraderie the other customer-service-oriented superintendents have worked so hard to build.

Salesmanship is a skill learned by practice and doing. We are not referring to the slick operator, or the "used car dealer" with a negative connotation often associated with sales. "Superintendent selling" involves honesty and integrity. Empathy and sincerity are two soft skills that are non-existent in the construction industry. However, changing these simple behaviors can have a long-lasting and positive effect not only on the firm, but also on its customers.

THE SALESMANTENDENT TREND

Firms spend countless dollars searching for talented young managers and salespeople. Curriculum in engineering and construction management schools across the country are slowly starting to incorporate courses that teach future generations of project managers skills in management, sales, and, most importantly, communication. Superintendents are faced with the daunting task of learning these softer skills through alternative means or they may find themselves obsolete. Promoting a culture of salesmanship must pervade every aspect of an organization. This includes forcing the superintendents to shift from a process-driven mentality with a single finish line and small prize to a goal-driven mentality with multiple finish lines and the grand prize. The grand prize is a customer that cannot live without your services.

The goals of the customer (i.e. a new office, a new building, a new site, no problems, etc.) must always be the goal of the contractor. While in principle this appears simple, we cannot abandon the *salesmantendent* vision when we hit the first "rock in the road." During these tumultuous times, *salesmantendents* aggressively pursue solutions rather than evidence to protect their interests. By demonstrating a business-development mindset, superintendents have the greatest ability to improve the project's performance in the short term and a firm's backlog in the long term. *Salesmantendents* do more than build buildings. They build relationships. ■

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Finding Opportunities with Marketing Due Diligence

Good research takes a considerable investment of time and money. But the results can be used to make profitable business strategy.

By Randy Giggard

This is the information age. Everyone wants it, and so much of it is available online that we assume all the information we need can be found there. Often that is the case, especially if you want to get the latest stock quote, the scores of last night's games, or tomorrow's flight schedules.

Yet, even if some of the information needed to run a business or prepare a business development and marketing strategy is available somewhere in cyberspace, the information is often old and the sources questionable or nonexistent. Good research is not free. It takes time to gather, compile, analyze, and interpret the data so that the results can be used to create actionable business development strategies.

In the financial world, the phrase "due diligence" describes the detailed research that needs to be performed by or for the buyer before a company goes public or before large stock purchases or similar investments. The process of due diligence research is designed to reduce risk by preventing surprises like unknown competition or market trends. It is clearly wise for a company to do its due diligence before large acquisitions. Using a due diligence approach before a company makes important business development and marketing decisions will sharpen a company's strategy and help to focus resources on the areas likely to provide the best returns.

The information a company requires to achieve a competitive advantage is the information that its competitors don't have. A company should know how its customers *feel* about the company and its products and services relative to the competition. The word "feel" is important here because perceptions are very important in customer relationships. As much as owners work to base their purchasing decisions on objective, quantifiable data like the lowest bid and specific qualifications, much of FMI's research has shown that owners want collaborative relationships with their contractors and suppliers, and such relationships depend on trust and responsiveness. The results of image studies and competitive analysis need to be set against the prevailing economic factors affecting the marketplace. This combination of research data allows for the creation of a market snapshot that will serve as the basis for market forecasting tailored to a company's specific markets.

"The information revolution is over. Information won." Author unknown, quote from the Internet

MARKET RESEARCH UNDERUTILIZED BY CONTRACTORS

A recent survey of contractors conducted by FMI, the *2004–2005 Business Development and Marketing Report*, found that little more than half of the contractors surveyed conducted any appreciable market research. The types of research projects most often undertaken by contractors included customer surveys, completed jobs analysis, and market analysis. (See Exhibits 1 and 2.) Clearly, contractors are basing important business decisions on insufficient information. In many cases, the fate of companies with annual revenues greater than $100M is being decided by strategic plans based on less information than the average consumer would gather before deciding to purchase a new family vehicle. A prospective homeowner may typically perform more due diligence before making a purchase than a contractor considering entering new markets or determining how to allocate its annual business development budget.

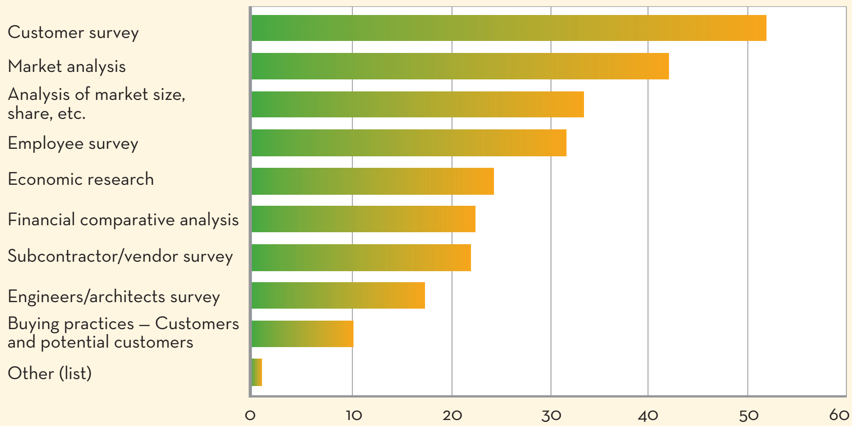
It is surprising that with so much at stake so little research is done to support a company's business development and marketing strategy. The following are the oft-heard reasons why contractors conduct or commission so little market research:

- It isn't necessary to make business decisions.
- We already know enough about our customers and markets.
- We know our competition without doing research.
- Our past experience with market research did not provide useful information.
- Market research takes too long.
- Primary research costs too much.

THE CONTINUUM FROM DATA TO INFORMATION TO KNOWLEDGE TO ACTION PLANS

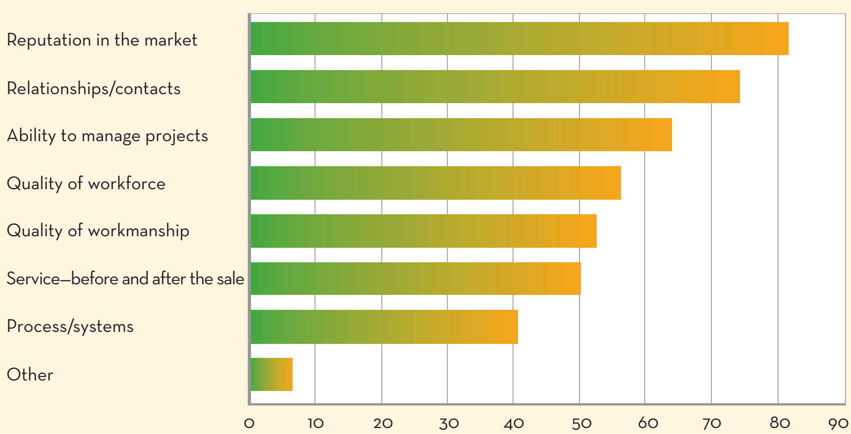
Contactors that are able to differentiate their services and provide a unique value proposition enjoy higher levels of profitability. Research that correlates customer buying practices with a company's image in the marketplace vs. its competitors provides a basis for analyzing company strengths and weaknesses. This, in turn, provides great information for strategic planning. Much of the reluctance of contractors to take advantage of market research seems to be due to a failure to connect the information dots. Good research is more than just a reporting of the

Exhibit 1
Frequency of Market Research
What formal market research have you done in the past three years?
Percent



Source: FMI 2004-05 Business Development and Marketing Report

Exhibit 2
Competitive Basis
What do you feel is the major basis of your competitive advantage or disadvantage?
Percent



Source: FMI 2004-05 Business Development and Marketing Report

data, it involves industry knowledge and interpretation of the data relative to the marketing or business problem. It is useful to think of the information stream as a continuum from data to research to knowledge to action plans.

SELECTING A RESEARCH FIRM

When selecting a research firm, it is critical to choose one that understands your specific business and markets. Working with a firm that knows the industry not only shortens the time it takes to design the research, it assures that the researchers can speak "construction." Some people think that commissioning a research project is as simple as calling a research firm and ordering an "image study." This is the fast-food approach.

While there are occasionally good reasons to conduct a "flash survey," most research requires the level of preparation you would find in a fine restaurant. A good research company will set up a collaborative relationship with you to learn more about the subject or the problem. This conversation will likely breed further questions to explore. The research firm should keep in touch with you, discussing current findings in order to refine the project. In the early stages of research, issues often emerge in the market which you may wish to explore. This may mean the scope of the project changes if you're anxious to learn more about certain questions. The research firm should stay involved with you through the entire process.

An understanding of the industry is important in the research firm you select because it helps the professional interviewer build rapport with interviewees, often sharing information as well as soliciting it. While mailed surveys are used to get a bulk of background information that is factual and quantitative with many data points, they do not yield the nuanced information, or subtleties of impression that telephone or face-to-face interviews can. Although telephone interviews are more expensive and time-consuming than written surveys, a good interviewer is able to get much information and ask follow-up questions to clarify responses or probe interesting initial responses. The interviewer gets a first-hand sense of the interviewee's concerns or feelings about a given subject. The face-to-face interview is underutilized; the time and money is well-spent with a good researcher/interviewer.

A good research company will set up a collaborative relationship with you to learn more about the subject or the problem.

A good interviewer can usually acquire more information than the company hiring the interviewer to do the work can. For example, a survey for a particular national market would yield much better results if the interviewer knows the client's business as well as their information needs.

The researcher might inquire about the client's business opportunities under pursuit. These companies can then be added to the interviewer's call list. The interviewer can talk with these companies and learn about their current project needs and the type of service they want from a contractor. The contractor client can then use this information when putting together a proposal, hitting all of the prospective customer's "hot button" issues. The interviewer's client probably could not have gotten the same results with their own direct interview since the owner/contractor relationship is guarded, especially before contracts have been negotiated.

The interviewer performing this research is not asking about particular projects, and so the potential customer opens up. While the research client in the example above benefited from a particular piece of knowledge in the immediate situation, the client will benefit even more as it recognizes the needs and concerns of its market as represented by the respondents in its research. To simply adjust its strategy for one client is to miss a forest of opportunities in the broader market. The real result of good market research is not a report with a bunch of graphs; it is a strategy leading to marketing-changing actions.

Market share is an important piece of information and often difficult for contractors to determine. The answer to the question, "What is our market share?" depends on how the term "market share" is defined, and there are several ways to go about it. Either way, the definitions should be consistent from year to year to track market-share metrics in a strategic plan.

For example, suppose a brick manufacturer wants to know his market share in a given region. The obvious approach is to look at how many bricks were sold into that market, and attempt to determine how many each supplier in that region sold. While that approach can provide some interesting information, it doesn't take into account the total market opportunity. Consider an alternative measure that looks at total wall space, walkways, and fireplaces that may not have been made of bricks, but could have been. Looking at bricks in this manner gives a very different measure of market sizing. It looks at the total opportunity to sell bricks. It asks, "How are we doing relative to total opportunity rather than relative to our main brick-manufacturing competitors?" Changing points of view of what defines a particular market as a result of research-based strategies can open up new definitions of the business and new marketing opportunities.

Market share or market sizing always presents difficulties in getting hard numbers. Most construction companies are privately held; therefore, they are not required to report sales revenues publicly. Consistency in method is important to get the same measurement period after period and develop trends that are useful to determine if a company is gaining or losing market share. Unlike consumer marketing where it is fairly straight forward to determine how much of a given product moves off the shelf each month, determining a contractor's share of the market involves a combination of factors and always results in an approximation. Being consistent in measurement and comparing results over time creates an important barometer of marketing effectiveness.

The real result of good market research is not a report with a bunch of graphs; it is a strategy leading to marketing-changing actions.

One of the most important pieces of market research and market sizing is the market forecast. An econometric approach allows a researcher to triangulate the current market and then project its trajectory into the future. Econometric modeling uses both a top-down and bottom-up approach. Getting the big picture, or top-down view, requires looking at broad economic indicators that make up the market drivers such as changing demographics, interest-rate projections, changes in labor force, etc. The effects of key demographics are projected for each market sector under consideration. As that analysis is under way, the researcher should correlate the data with historical research looking for trends and anomalies in the data. This information is bolstered with secondary data from government reports, project announcements, regulatory changes, and other key influencing factors. Further, bottom-up information can be derived from current building permits, projections from market prospects, and other "facts on the ground."

STATISTICAL VALIDITY

"Statistical validity" is more appropriate for consumer research, such as in the case of determining who is winning the "cola wars." Research performed for contracting services or manufacturing products usually depends on gathering the information required to make a *reasonable business judgment.*

In reality, few business decisions are made on the basis of anything like statistically valid samples. This is where the researcher's experience and understanding of the industry becomes critical. The researcher can interpret the data in light of industry trends and use an insider's gut feeling based on good research information. Usually, 30 to 35 "collection points" are needed to make an analytical pass. The researcher should focus on getting an answer to your initial question.

DELIVERING RESULTS

The culmination of a marketing research project starts with a preliminary report of the results. A draft report is sent to the client team for comment and questions. This period allows everyone on the team to be assured that their information needs are being met. It also gives the client's team a chance to

The culmination of a marketing research project starts with a preliminary report of the results.

review the data and request different views or cross tabulations of the data, if needed.

The next step is usually an on-site debriefing and Q&A session. The research firm will present its interpretation of the data and answer further questions from the client's team. Frequently, the interpretation of the results reveals some unexpected information and recommendations. For example, a client may be looking for research that supports their planned move into the education market, but the data does not support this move. When justified, such reversals of plans can often save a lot of time and money in pursuing unfavorable market directions. The de-briefing session ends with a discussion of further research needs and the importance of re-sampling certain aspects of the research to track plan progress.

Due diligence is a process used to reduce risk when undertaking large investments. Business development and strategic planning are among the largest investments a company can make in its future, if only to avoid deploying a company's "get work" resources in unprofitable markets. However, the real benefit of business development research is the discovery process; information can be a powerful lens to extend a company's vision. ■

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How Changes in Healthcare May Affect Your Strategy

The following article details four potential future scenarios for the healthcare design/construction market based on FMI's research. Consider the implications of each for your firm.

By Mark Bridgers, Peggy Lawless, and Blake Church

The healthcare construction market is unique and buffeted by many forces of change, including the furious pace of technological advance, demographic shifts like the aging population of baby boomers, an unrelenting demand for healthcare services, and the labor shortage for critical-care givers. As we move through the next 15 years, the landscape in this market will become unrecognizable, and the strategies that are succeeding today will no longer be relevant. The question for participants in this market, or those considering entry is: How can we develop a long-term strategy to succeed in a market that changes so rapidly?

In order to help firms build effective strategies and establish a competitive advantage, FMI set out to identify potential scenarios for the healthcare market. The issues and trends uncovered in our research were used to build a series of four descriptive scenarios representing a non-linear analytical process looking at possible futures of the healthcare construction market. These scenarios describe opportunities and possible futures for this marketplace.

Following are the four potential scenarios:

Owners self-perform — Hospital owners become more vertically integrated and take on a greater role in the management of design and construction-service providers. At the extreme, owners build internal groups or purchase design/construction capabilities to meet internal needs.

Owner consolidation — Hospital owners continue to consolidate, resulting in a bifurcation of the market space. The market consists of a relatively small number of large firms and a larger number of small, local, and highly specialized healthcare facilities, which are highly competitive in their niche markets.

Manufacturers expand operating footprint — Manufacturers of building and medical systems expand their base to dominate other service providers. These manufacturers become directly connected and integrated into the day-to-day operations of healthcare facilities where they are able to dominate the design and construction of facilities in the role of program managers.

Universal healthcare — The federal government steps in to manage and ultimately ration healthcare services due to the myriad of issues facing the market that resist solutions (i.e. financial performance and access to capital, increasing healthcare service demand, and continued labor shortage).

Underlying these four scenarios are six key trends, each of which is creating profound effects on firms operating along the healthcare supply chain. These trends are:

- The aging U.S. population
- The financial constraints of hospitals
- The increasing shortages of nurses
- The increased rate of technology adoption and change integration
- The changing role of government reimbursement and regulation
- The market's aging facilities.

The analytical approach of developing potential market scenarios can lead to the development of more robust market strategies and ultimately a competitive advantage.

Linear projections of construction spending, market forces, and key trends are helpful in understanding the nature of a marketplace. However, they fail to take into account disruptive actions and unforeseen or unanticipated events that ultimately shape the future. The analytical approach of developing potential market scenarios can lead to the development of more robust market strategies and ultimately, a competitive advantage. Each of the scenarios given here takes into account a mixture of interactions between key drivers or trends and their implications for owners, construction service providers, manufacturers, and other stakeholders participating in the healthcare market.

Exhibit 1

Supply Chain Functions

Exhibit 2

Supply Chain Service Users/Suppliers

The scenarios depicted are believed to be the most relevant, but they do not necessarily represent a prediction of the future. Ultimately, this analytical approach is designed to spur unconventional thought, debate, and decision-making.

METHODOLOGY

In late 2004 and early 2005, FMI began the process of exploring the healthcare construction market. Our research was focused on building an understanding of the current healthcare market supply chain and the forces acting on the broader healthcare construction market. To describe the function and the positions in this market space, we depict the supply chain as described in Exhibits 1 and 2. Exhibit 1 describes a series of potential functions necessary to build and operate a healthcare facility. Exhibit 2 details the multitude of potential service users or suppliers along the healthcare construction supply chain. These users and suppliers are not mutually exclusive, and a given firm may occupy more than one space in the supply chain.

Interviews with industry experts occupying each of the supply chain positions as well as primary and secondary research were utilized to establish a set of key "certainties" and "uncertainties." Both items are incorporated into Exhibit 3. It is these relative certainties and uncertainties, around which we built the scenarios.

Exhibit 3

List of Relative Certainties and Uncertainties

Relative Certainties	Relative Uncertainties
– The aging trend for the baby boom generation is highly predictable.	– Increasing immigration and offshore resources may augment a reduced labor pool.
– Generation X is entering the prime working age range and will supply a much smaller labor pool than the exiting baby boom generation.	– Trends relative to "length of stay" in healthcare facilities may impact the number of beds required to serve a given region.
– Demand for specific healthcare services will increase as the baby boom generation ages, becomes infirmed, and ultimately expires. These services include: cardiology, pulmonary, orthopedics, gastroenterology, etc.	– Rapid and continuous change in technology may impact facility design and construction.
– Continued specialization of services will occur for doctors and surgeons.	– Specialized facilities and procedures may increase the number of outpatient service providers and reduce the number of beds necessary.
– Baby boomer preferences for services will continue to change the nature of healthcare facilities.	– The short-term and long-term intensity of legislation, regulatory requirements, and/or market forces impact the management of environmental concerns, toxic byproducts, and waste issues.
– Per capita U.S. healthcare spending vs. GDP will continue to be the highest in the industrialized world.	– The speed of Certificate of Need (CON) requirements may liberalize in order to better match supply and demand of medical services.
– Reducing the cycle time from concept to facility operation will be a main focus for participants in the supply chain.	– The next steps for governmental regulations and reimbursement for healthcare services are uncertain.
– Technology costs will continue to escalate for building systems and medical equipment, making these components much more critical to facility operation and, ultimately, design and construction.	– The impact to the Veterans Administration and military healthcare system is uncertain as baby boomers and active-duty veterans of the war on terrorism move through the system.
– Invention of new technologies allowing for earlier and more effective diagnosis and/or allowing treatment of previously untreatable illnesses will occur.	– The success or failure of the healthcare system to respond to major terrorist attacks that sickens or disables a large number of people is unclear. (i.e. dirty bomb, water or food system poisoning).

Ultimately, we offer these topical areas as the ones likely to drive the development of strategy and tactics for firms operating along the healthcare supply chain.

SCENARIO NO. 1 — KEY DRIVING TRENDS

Trend No. 1: Changing Design Requirements

Greater demand is being placed on healthcare service providers for "green" construction. This demand is frequently in conflict with the current operating model for many medical facilities that are generators of significant waste and toxic byproducts. A growing number of healthcare organizations are incorporating sustainable or green building practices into the design, construction, and operation of their facilities. In 2003, the Boulder Community Foothills Hospital became the first medical center to achieve a Silver LEED® certification. Other healthcare facilities are making efforts to reduce construction and operational waste, conserve water and energy, preserve the natural environment, and improve indoor environmental quality. Healthcare Corporation of America (HCA) uses a water conservation program at its hospitals that reduces costs 15% to 20%. The American Society for Healthcare Engineering has developed Green Healthcare Guidelines to protect the health of building occupants, community members, and the environment. The pursuit of more environmentally friendly facilities will continue and begin to feed into the design process more frequently.

An alternative design model built around the concept of evidence-based medicine is gaining traction. There are a number of ongoing studies currently that have reported preliminary findings on the use of evidence-based medicine; these findings are revealing that hospitals are lowering staff turnover, generating greater patient satisfaction, reducing the amounts of pain medication required, as well as lowering the variable operating cost per patient.

The design elements that frequently contribute to this type of healing environment include:

- Visual privacy
- Patient control of temperature, sound, and lighting
- Overnight accommodation for family caretakers
- Outdoor garden areas, fountains, and fireplaces
- Warm and cool color schemes that encourage the desired activity level
- Artificial lighting in the 3500K range
- Indirect lighting and day lighting
- Access to nature, either directly or with a window view of nature
- Avoidance of sense stressors, such as glare, noise, smells, and vibrations.

As these studies are concluded, these design elements will become much more common in order to attract the spending of baby boomers who will tend to select facilities based on the previously described characteristics.

The prognosis is good: The healthcare sector will remain fairly strong for the next five years driven by the fact that the U.S. spends more on healthcare than any other industrialized country.

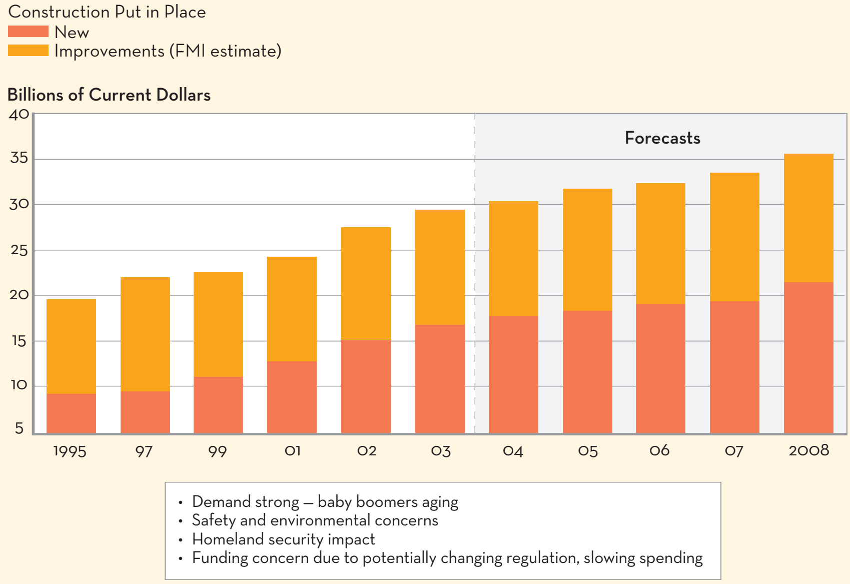
Trend No. 2: Healthcare Construction Spending

The prognosis is good: The healthcare sector will remain fairly strong for the next five years driven by the fact that the U.S. spends more on healthcare than any other industrialized country. In 2000, total healthcare expenditures were $1.3 trillion, representing approximately 13.2% of Gross Domestic Product (GDP).[1] Germany, Switzerland, Canada, and France spend 10.4%, 10.6%, 9.5%, and 9.6% respectively of their GDP on healthcare.[2] It is estimated that U.S. spending should reach $2.8 trillion by 2011 and equal 17% of GDP.[3] Fueling the demand for healthcare facility

Exhibit 4

Healthcare Construction Services Spending — Value of U.S. Healthcare Construction

Construction Put in Place



Source: FMI Construction Outlook 2004 (The healthcare construction category was redefined by the federal government in 2004, and a breakdown of improvements vs. new construction is no longer maintained. FMI has estimated the amount of improvement construction. The year 2004 and forward are FMI forecasts.)

design and construction are the health needs of an aging population, outdated buildings, and advancements in medical technology and treatment procedures. The aging of facilities is, in part, related to the 1950's Hill Burton Act, which resulted in a wave of rural hospital building across the U.S. between the 1950s and 1970s. To cope with the capacity constraints that have arisen, healthcare companies are diverting more patients to outpatient facilities and adding considerable square footage to their facilities. In addition, labor-saving facility design and technologies are necessary to meet demand for services with the nursing labor shortage.

FMI projects in Exhibit 4 that healthcare construction will grow by 19% from $29.58 billion in 2003 to $35.18 billion in 2008. When selecting designers and contractors, healthcare owners give greater weight to companies experienced in the healthcare sector because building healthcare facilities is so complex. There is more consolidation in this market than most other construction markets. For instance, the education market remains highly fragmented. Concentration in the healthcare construction market belies the intense competition among firms delivering construction services to this market.

Trend No. 3: Aging Demographics

The baby boomer population (76 million Americans born between 1946 and 1964) will continue to strain hospital capacity. (See Exhibit 5). The Social Security Administration reports that more than 35 million Americans are age 65 or older. Between

2000 and 2010, the number of Americans between the ages of 55 and 64 will jump 47.2%, compared with only a 2.8% increase among those aged 25 to 34. By about 2030, senior citizens will make up approximately 20% of the population. Historically, 5% of the population accounts for 50% of the nation's healthcare expenditures and this 5% tends to be both aged and infirmed.[4] Similar research has also found that seniors use 4.5 times more services than do those below age 65.[5] The movement of the baby boom population into their 50s and 60s dictates that healthcare spending will rise, and it is predicted to increase from $200 billion to $1 trillion by 2010.[6]

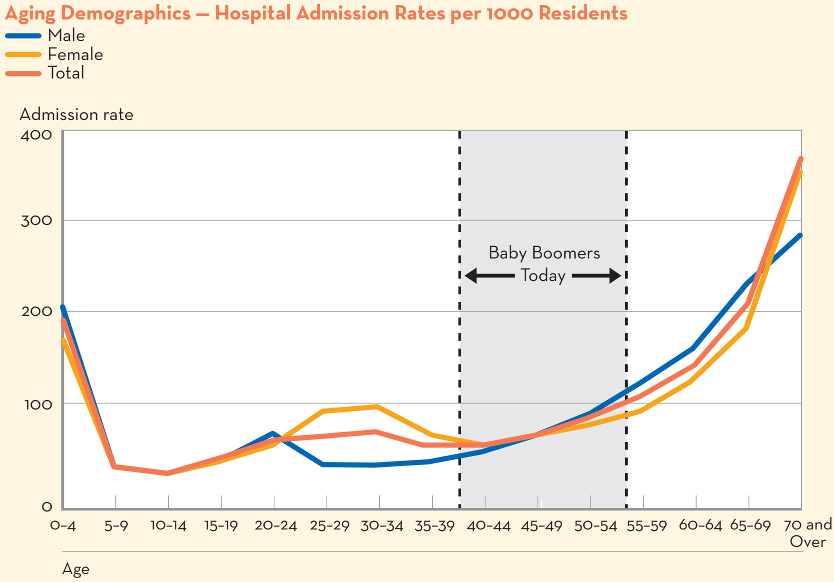
The demand for improved operational efficiency and patient flow, better health and healthcare solutions such as outpatient services throughout the 1990s, has pushed the demand for healthcare services further into the future. It will not eliminate it, however. Between 1991 and 2001, total bed numbers fell by nearly 100,000, dropping to 826,000,[7] and between 1980 and 1999, inpatient days dropped from 280 million to 160 million.[8] Much of this change is attributable to outpatient services. By 2012, some demographic predictions indicate that 150,000 to 200,000 additional beds may be needed nationwide[9] and looking out further, some prognosticators believe the demographic shift alone will raise the required beds 46% by 2027.[10] The services demanded will shift as well due to aging baby boomers. Cardiology, pulmonary, orthopedics, and gastroenterology services will be in great demand.[11]

Trend No. 4: Aging Facilities

A 2004 survey conducted by Hospitals & Health Networks found that 60% of

Exhibit 5

Aging Demographics — Hospital Admission Rates per 1000 Residents



- Historical records demonstrate a significant rise in the admission rates as populations age
- The baby boom population is today entering the age range where admissions are expected to rise
- The sheer size of the baby boomers (76 million people) is nearly twice the size of the generation that precedes them

Note: Excludes normal deliveries and legalized abortions.
Source: American Hospital Association

hospitals and 68% of health systems need to replace aging facilities. Hospitals must reinvest in their outdated physical plants in order to effectively respond to increasing demands for services as well as the changing nature of these demands.

SCENARIO NO. 1 SUMMARY

Owners Self-Perform

Between 2010 and 2030, demographic trends accelerate demand for both medical services and construction. These challenges along with the advanced age of existing facilities, drives owners to rebuild administrative staffs to manage the process of construction, acting as their own general contractor. More vertically integrated

Scenario No. 1

Owners Association Board of Directors Address Members' Changing Needs

January 6, 2020

Annual Open Letter to Our Members:

The BHOA (Big Hospital Owners Association) has made great strides over these past five years to further our members' interests. We count our successes in many ways:

- *The number of individual memberships and certifications has increased by 16% annually over each of the past five years.*
- *Our benchmarking and best practice efforts have demonstrated a 9% average lower cost and 13% increase in speed from concept to facility operation over non-members.*
- *We have certified and trained 2,200 individuals who have received the CHC (Certified Healthcare Constructor).*
- *Our current May graduating class is our largest ever, including 450 individuals.*

When our association was chartered in 2005, we followed the path of many other associations. We offered an annual conference where we brought in interesting speakers to discuss the issues of the day. We found that the discussion of these issues did little to cause real change and by 2010, we were discussing the same issues. We asked: What more can do for our membership?

In our 2010 strategic planning process, we identified a number of key changes already beginning to impact our industry. One of the critical weaknesses identified in our typical member was an inability to implement efficient and effective construction of hospital and medical care space. We continued to see an increase in the volume of construction necessary to meet patient demand, pushing this issue to the forefront for many of our members.

As a result, our central initiative over the last five years has focused on promoting the efficient and effective delivery of healthcare construction through "lean" concepts. We set a goal of helping our members build the internal skill set necessary to engineer and manage their required construction efforts. We took ownership of the training and education necessary to support our membership and designed a four-tiered training curriculum modeled around a combination of classroom and practical work. Included was the utilization of an all electronic, 24/7 classroom that introduced both flexibility and customization to the process.

As our industry continues to rely on internal skill sets, the designers, owners' representatives, construction managers, and project managers are critical to the healthcare business model. Your board recognizes that we cannot achieve our goals without creating alliances, particularly with subcontractors who are providing the critical labor.

In the upcoming year, we will begin work on an initiative with several key union organizations and a group representing non-union subcontractors to integrate our training with their existing apprenticeship and training programs. This effort will serve to build alliances with representatives of labor, enhancing the most critical resource necessary to meet the needs of our healthcare business model.
Each of you will soon see evidence of these latest efforts, and as we have always done, we will focus on measuring the impact of our initiatives. We will continue to communicate the positive benefits of working with our members and wish each and every one of you continued success!

Sincerely,
Board of Directors
BHOA

hospital owners will take up a greater role in the management of design and construction. At the extreme, owners will build internal groups or purchase design/construction capabilities to meet internal needs.

Owners have become much more aggressive in building internal architectural/engineering resources and acting as their own construction manager, resulting in the use of subcontractors exclusively to provide trade labor. The letter shown at left serves as an illustration of this scenario. The letter is from the board of directors of a healthcare construction owners association that has adjusted its services to meet its members' needs.

Implications of Scenario No. 1

- Collaborative relationships will be disadvantaged as hospital owners build expansive internal experience and capability.
- Alternative delivery systems shortening the construction process from concept to facility operation will be preferred.
- Program managers, construction managers, and general contractors who do not self-perform or otherwise control a labor force will be disadvantaged.
- Hospitals will staff key project management individuals or purchase a design/construction service provider.
- Accelerating demand for design/construction services will push large multi-site firms to consider centralizing the management of design/construction services.

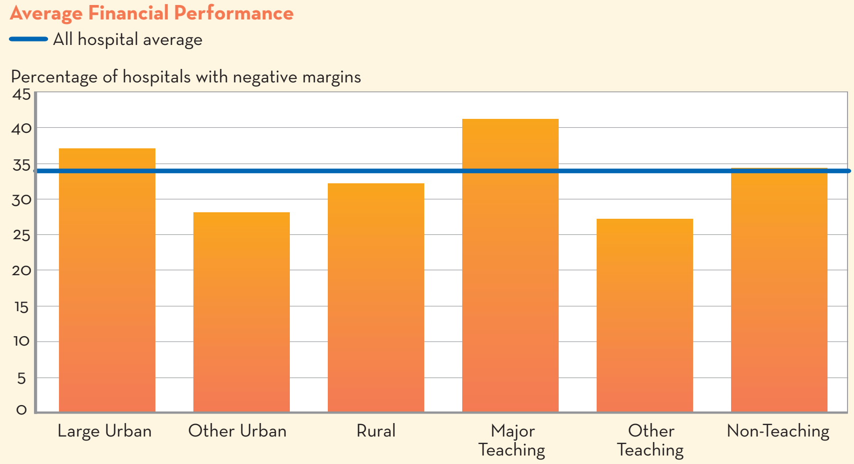
SCENARIO NO. 2 — KEY DRIVING TRENDS

Trend No. 1: Hospital Financial Constraints

A 2004 study by the Kaiser Family Foundation found that hospitals are struggling with growing debt levels because patients are not paying their deductibles or co-payments. HCA, Tenet Healthcare, and Triad Hospitals had combined charges to earnings of $350 million for bad debt. These trends are believed to be driven by an increasing uninsured or underinsured population. The Congressional Budget Office (CBO) estimates that there were between 57 million and 59 million Americans uninsured at some time during 1998, the most recent year for reliable data due to how this information is collected by the federal government. Of those, between 21 million and 31 million were uninsured for the entire year. The use of emergency room services for routine medical services also drives these statistics. The Centers for Disease Control reports that there were 110.2 million emergency department visits in 2002. This represents a 23% increase over the 90 million visits made in 1992. Their analysis of 2000's data shows that approximately one-third of all U.S. hospital emergency departments serve a disproportionately high number of Medicaid and uninsured patients. Most emergency departments were not designed for high volumes of patients, or the medical technology currently in use.

Exhibit 6

Average Financial Performance



As failing hospitals are acquired or cease to provide services, the business model moves toward specialization and segmentation of services.

Source: MedPAC Report to Congress, March 2003, study completed by Virginia Commonwealth University

Access to capital is a critical issue for healthcare organizations. Capital expenditure is highly correlated to higher operating margin.[12] There are large portions of the market that are not generating reasonable margins with stand-alone or single-state facilities. These organizations are attaining a median operation margin of only 1.7% and that margin is trending down.[13] Other statistics described in Exhibit 6 show that more than 30% of hospitals have negative margins, and Standard & Poor's report from January 2005 detailed that "the not-for-profit healthcare sector is entering a new era of significant uncertainty."[14] The physical location of facilities is driven by migration patterns, and the financial performance of hospitals follows these trends. The greatest margins for healthcare are generated in the areas with the most new baby-boomer migrants — the South and West.[15]

There is a further change in the business model toward specialization and segmentation of services as failing hospitals are acquired. Mega hospitals are coming; there are currently six planned that will consist of more than one million square feet and cost greater than $300 million to build.[16]

The greatest margins for healthcare are generated in the areas with the most new baby-boomer migrants — the South and West.

Trend No. 2: Government Reimbursement/Regulation

Hospitals that specialize in the treatment of female, cardiac, orthopedic, or surgical patients are under scrutiny if they are physician-owned. As part of the Medicare reform legislation passed in November 2003, also referred to as "Starks Legislation," Congress ordered a temporary ban on physician billing of Medicare or Medicaid for patients treated at any new specialty hospital in which the doctor has a financial interest. Specialty hospitals already in existence, or those in development by November 18, 2003, are not subject to the referral moratorium. The moratorium has forced a hold on specialty hospital construction. For example, plans for two heart hospitals in the metro-Phoenix area were cancelled. Yet, changes in safety and environmental requirements can necessitate renovation or rebuilding. For example, California hospitals will spend an estimated $24 to $41 billion to comply with new seismic standards by 2008. This legislation is referred to as OSHPOD.

A total of 14 states do not have any certificate of need (CON) requirements. In Exhibit 7, a basic description of the relative scope and review thresholds required by CON is broken down by state. There are seven states that require a larger scope and more detailed review. The uses of CON requirements are highly politicized, and there are mixed trends relative to its increase or decrease in use. The highly fragmented nature of it and its implementation at the lowest local levels makes a discussion of the direction and velocity of the change at a high level difficult, if not impossible. As pointed out in one survey of professionals, "Pent-up demand has held back new healthcare construction projects in some high-growth markets. CON regulations have slowed new building projects or bed expansions in some high-growth locations while state regulators wait for local growth to fill up existing facilities in nearby communities. Fast growing affluent areas are experiencing intense competition to build new

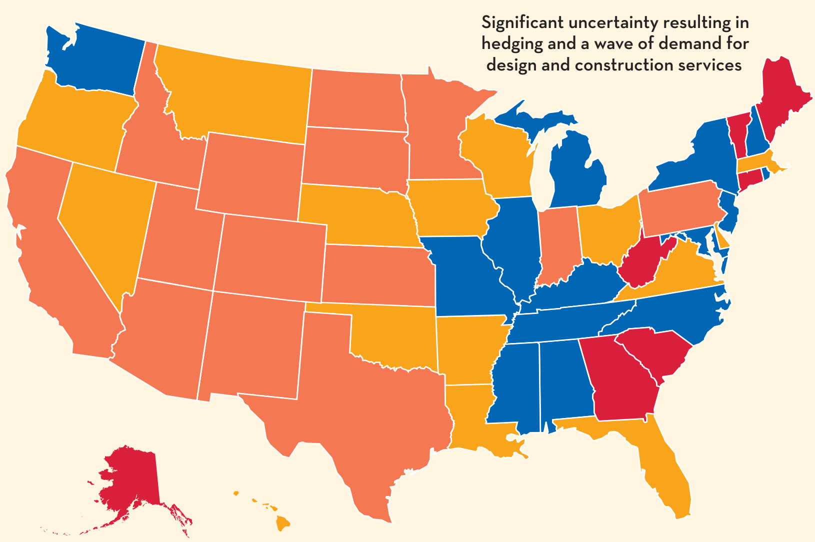
Exhibit 7

Certificate of Need Requirements

A Map of the 2004 Relative Scope and Review Thresholds: CON Regulation by State*

Weighted range of services reviewed

- No Con
- 0 – 9.9
- 10.0 – 19.9
- 20.0 – 44.0



** A geographic illustration of the CON matrix*

Source: Piper, Thomas R, Compilation of information summarized from the 2004 National Directory of Health Planning, Policy and Regulatory Agencies, fifteenth edition, published by the American Health Planning Association, Jefferson City, MO, October 1, 2004.

healthcare facilities.... These 'go-grow' markets will be the focus of intense competition and capital investment from local hospital, physician investors, and entrepreneurial companies."[17] As demand for various services increases, these boards will be looked upon as impediments to the effective and efficient delivery of services and will face pressure to justify their involvement in the process of determining where and how healthcare services are delivered.

SCENARIO NO. 2 SUMMARY

Owner Consolidation

Financial constraints; lack of federal or state relief; changing baby boomer service demands; and rapidly needed new and upgraded facility/bed space driven by demographics and shifting technology conspire to drive a restructuring of healthcare services' delivery. The result is an elimination of standalone and small healthcare systems and the creation of three to five large providers as well as large numbers of highly focused specialty facilities. Another result is an advantage for large, nationally scoped, and true design-build service providers with internal A/E capabilities. The breadth of services offered will look more developer-like as they focus on supply chain management.

World Healthcare Company (WHC) is embarking on another wave of facility construction and seeks a senior project manager with construction industry experience to drive the corporate construction strategies in the southeastern U.S. Scenario No. 2 (see page 125) details an employment advertisement placed by WHC.

Implications of Scenario No. 2

- Increased use of collaborative relationships with large, national, and design-build service providers acting as an extension of the healthcare owners staff will result.
- Management of the construction process will be addressed through the integration of outside design.
- Increased integration of design/construction service professionals, particularly program managers and construction managers will occur.
- Integrated design and construction service providers will be preferred as there is movement toward a more design/assist or design/build-like model as well as pulling these firms into the process closer to the space a financier or developer might occupy.
- The ability to address a broader array of supply chain functions will be preferred.

Scenario No. 2

Employment Advertisement

Company:	World Healthcare Company (WHC)
Title:	Senior Construction Manager
Position:	Full-Time
Date:	January 1, 2020

Position Details:

Reports To: **Senior Vice President – Supply Chain**

Objective: To oversee all planning, design, and construction on healthcare facility projects in the Southeast, including the management of planning, design, and construction personnel as well as subcontractors and suppliers of labor or equipment. Performance is monitored to schedule and budget with a detailed cost tracking, consistent with company policies and procedures.

Requirements: Bachelor's degree in engineering or construction-related degree or equivalent combinations of technical training. Must have a minimum of 10 years work experience in healthcare facility design/construction and a minimum of five years of supervisory or leadership experience, including responsibility for project scheduling, cost tracking, and subcontractor or supplier utilization.

Excellent communication and interpersonal skills, and strong decision-making skills are required. Candidate must have knowledge of construction cost accounting processes such as job costs, material tracking, estimates, and budgets. Must be able to respond quickly and effectively under tight deadlines and have the ability to develop a strong, cohesive team. The preferred applicant will have experience managing supply chain partners and operating within a strategic alliance framework.

Additionally, the ideal candidate will have previous interaction with various hospital operations staff and design/construction service providers. Documented experience working with these individuals to plan, design, and construct a facility to meet a team's expectations are core to the responsibility for this role.

Company: Based in Durham, N.C., WHC is the nation's leading provider of healthcare services. WHC is composed of locally managed facilities that include approximately 300 hospitals and 182 outpatient surgery centers in 33 states and 14 overseas countries. The design and construction services to WHC are procured and managed centrally through a strategic alliance relationship with two key firms. Construction management is implemented regionally through four operating regions in the U.S.

- The specialization of healthcare services will demand a higher degree of differentiation from firms working locally.
- Significant regulatory and government reimbursement uncertainty resulting in short-term hedging or indecision on capital expenditures will create a future wave of demand for design and construction services.

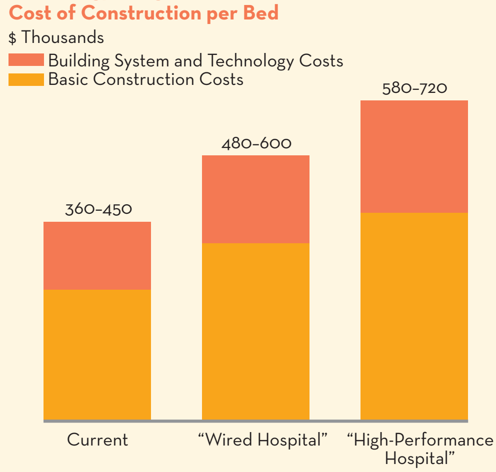
SCENARIO NO. 3 — KEY DRIVING TRENDS

Trend No. 1: Technology Adoption and Integration Speed

Technology use and alternative diagnostic and specialty treatments are, in part, driving up the cost of both healthcare services and the facilities that provide these services. Handheld devices, bedside analytical testing, and wireless computers are influencing the design and construction of medical centers. In-room technology requires greater standardization of room layouts and more space. Eventually, central laboratories may become obsolete as testing is shifted to the bedside. This shift is

Exhibit 8

Technology Integration Impact: Cost of Construction per Bed



Greater integration of technology into the physical building and medical systems drives the cost structure for design/construction of healthcare facilities up 60%.

Source: Marshall and Swift: Healthcare Advisory Board Interviews and Analysis. Innovations Center – DOD Health Facility Executive Steering Committee Meeting, Re-Envisioning the Acute Care Enterprise Toward the Health System of the Future, pg 11.

changing the typical cost per bed for facility construction. It is expected to rise to $1.3 million as technologies are integrated into high-performance facilities. Exhibit 8 shows the current costs. This change in cost structure may result in a shift of power on the supply chain toward manufacturers. The impact of these technologies is acting to both reduce and lengthen hospital stays. Non-invasive diagnosis is pushing down the length of stay (LOS), but new treatments for difficult health issues are pushing up the LOS. As described previously, outpatient services have dramatically reduced the LOS, and some studies demonstrate a reduction in LOS from 7.3 days to 4.9 days, on average, during a similar time period.[18,19]

At least one building system and medical-equipment manufacturer is moving in this direction. “A Siemens One team, which reports directly to our President and CEO…is helping our Group Presidents present one face to the customer.”[20] This one face to the customer includes the potential bundling of system solutions for medical, communication, building technologies, and power transmission and distribution for each customer. The potential integration of these services may help specialty hospitals focus on enhanced volume of specific patient services and procedure types that would improve quality and efficiency.

Trend No. 2: Productivity Improvement Opportunities

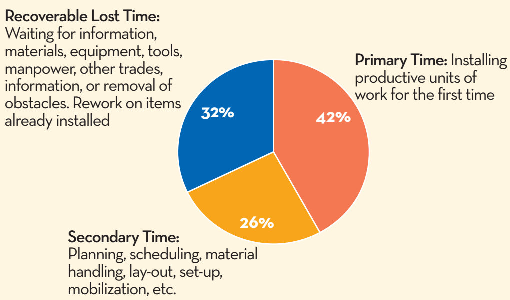
FMI’s research into construction industry productivity has consistently revealed that nearly 30% of productive time is wasted on the job. (See Exhibit 9.) A recent survey of contractors’ productivity practices revealed that nearly 80% of all respondents felt that they could save at least 5% to 10% of

FMI’s research into construction industry productivity has consistently revealed that nearly 30% of productive time is wasted on the job.

their annual field labor costs with better management. Productivity improvement, like safety improvement, takes a considerable amount of support from upper management and great attention to the details of the construction process. FMI's survey found that most companies do not have formal plans to improve productivity, nor have they made significant investments to improve their processes. On the other hand, those who have made such company-wide efforts are enjoying a competitive advantage. Research has shown that the following steps are necessary to achieve process improvement: share labor-flow management by having supplier staff on site; link metrics to both owner and supplier organizations in a shared fashion; establish a technologically driven sharing of information; and tie services/products demand together to support both long-term and short-term operations planning.[21] Once these strategic steps are implemented, the generation of productivity improvement is achieved by shifting thinking toward the system of construction rather than the silos of functions. Stated another way, the opportunity to drive supply-chain success requires the following:[22]

Exhibit 9

Healthcare Construction Productivity



- Recoverable lost time represents nearly 1/3 of average time spent on field activities at a typical job site
- Recapture of this time is possible through the use of effective planning and project management techniques

Source: FMI internal research

1. Recognize strategic possibilities,
2. Embrace end-to-end process improvements,
3. Execute supply chain initiatives selectively, and
4. Challenge the status quo regularly and aggressively.

SCENARIO NO. 3 SUMMARY

Manufacturers Expand Footprint

Rising building/medical system costs, rapid technology shifts, and baby-boom demand for specialty treatment diagnosis are disrupting the healthcare business model. A recognition that hospital workflow as well as operations using high technology building systems and medical equipment are paramount in driving operational efficiency results in manufacturers expanding their footprint to become a single point of interaction. The result is that large, integrated, and multiple system manufacturers are advantaged by occupying the former supply chain space of program managers, construction managers, equipment specifiers, and designer service providers. Manufacturers' financing capability, consultant services, and maintenance/operations contracts result in a commoditization of design, construction, and sub-trade services and price-based competition.

Scenario No. 3

Manufacturer Expands Influence Through DBOOM Contract

FOR IMMEDIATE RELEASE
April 1, 2020

Contact: John Doe
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GEICmens Announces 25th DBOOM Contract

RESEARCH TRIANGLE PARK, N.C.—GEICmens CEO Joe Smith announced today the consummation of their record 25th Design, Build, Own, Operate, and Maintain (DBOOM) contract worldwide. In announcing the deal, GEICmens solidifies their lead in the market of providing one-stop solutions to the healthcare marketplace. "I believe the synergies created by this record 25th announcement demonstrates the benefits provided to our healthcare clients will be exceptional, resulting in them maintaining their focus exclusively on the delivery of top quality health services," said Smith. "Not only will we be able to provide a consulting service and manufactured goods to our clients early in the conceptual planning process, we will also be outfitted to interact smartly with our client's design and construction representatives. As demonstrated in our previous 24 efforts, we intend to save our healthcare clients on short-term construction change-order requests and long-term in support of hospital operations for both building and medical systems."

The announcement of this deal marks a wholesale shift in the mindset of how to successfully plan, design, construct, and operate a healthcare facility. Traditionally, the process was lengthy due to the difficulty of obtaining a CON, and the typical hospital that was being constructed between 1950 and 1970 was not up-to-date from a technology standpoint. "Given the system-level complexity of today's hospitals, and the fact that most are designed around emerging technologies and devices, the management of the process must be both proactive and integrated where multi-million dollar machines are concerned," said Smith. The typical cost of a healthcare facility has skyrocketed over the previous decade as additional technologies are required to treat the aging baby boom generation. "Today, technology integrated into the building systems, medical devices, power management, and mobile connections allow for greater flexibility, individualized healthcare service delivery, and dramatically improved operational efficiencies. The growing demand for healthcare services requires that we achieve speed in the physical construction of a facility; our efforts across the entire supply chain allow us to deliver this for our clients," responded Smith. "GEICmens believes the increased footprint of our firm can be leveraged to drive returns and continue to result in higher customer satisfaction.

GEICmens is a $440 billion dollar firm headquartered in Zurich, Switzerland, with the U.S. headquarters located in Research Triangle Park, N.C. Founded in 1884, the firm has always been a leader in the supply of technologically driven manufactured products. With 212 manufacturing sites worldwide and headquarters located in six critical countries, the firm is well positioned to understand both global and local trends worldwide. The company employs 240,000 worldwide and offers both consulting services and manufactured products in the medical, communication, building technologies, and power transmission and distribution segments.

Implications of Scenario No. 3

- Greater, but exclusive integration and collaboration, will result between owners and manufacturers.
- The management of the process of design/construction will shift toward a program manager-type model with the manufacturers providing this service.
- A multitude of delivery systems will be utilized with some consistency focused on reducing the cycle time from concept to facility operation.
- Large manufacturers will occupy the former space of program managers, construction managers, equipment specifiers, and designer service providers. Their financing capability, consultant services, and

maintenance/operations contracts result in commoditization of design, construction, and sub-trade services.
- Improvements in construction productivity will be demanded as a more rigorous and scientific approach to "lean" type construction management methods are more widely implemented by manufactures familiar with the concepts.

SCENARIO NO. 4 — KEY DRIVING TRENDS

Trend No. 1: Nursing Shortage

The shortage of healthcare workers is expected to become more severe. To provide some flavor for this issue, consider the following:

- Bernard Hodes Group reported in December 2004 that the current nursing vacancy rate is now at 16.1%.
- The American College of Healthcare Executives reported in their annual "Top Issues Confronting Hospitals: 2004," that 72% of hospital CEOs were experiencing a nursing shortage at their facilities.
- The U.S. Bureau of Labor Statistics published in the February 2004 *Monthly Labor Review* that registered nursing will have the greatest job growth of all U.S. professions in the time period spanning 2002–2012, resulting in a need for more than one million new and replacement nurses.
- In 2001, there were 126,000 vacant nursing positions or an average vacancy rate of approximately 13%. That shortfall could expand to 700,000 by the year 2020.[23]
- At the typical facility, nursing costs represent 44% of all inpatient hospital costs.

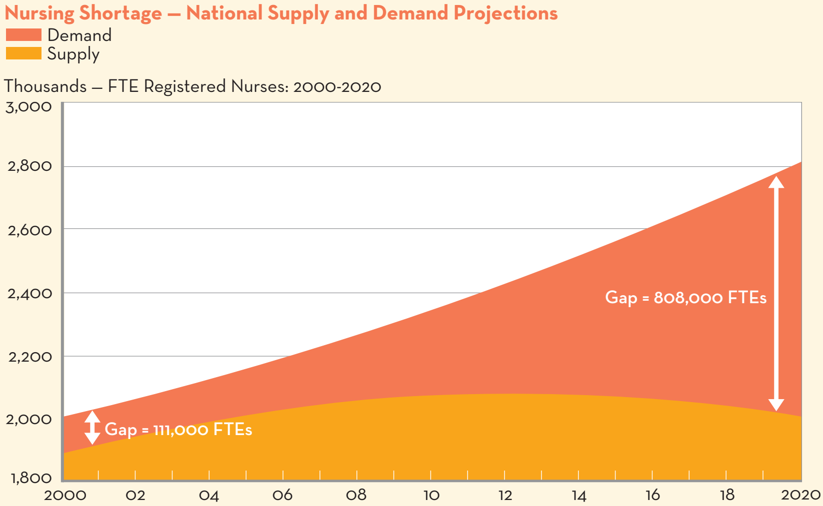
During the next 10-year period, healthcare facilities will need to fill more than 1.1 million positions. Acerbating the issue is the fact that the average age of a nurse is currently 45 and this figure is increasing at twice the rate of other industries.[24] A 2004 report from the Health Resources and Services Administration projects that, without aggressive intervention, the registered nurses (RN) workforce will fall 29% below requirements by the year 2020. The U.S. Department of Health and Human Services outlines that the nation's hospitals currently need 110,000 more nurses. In five years, according to the Labor Department, an additional 450,000 nurses will be needed. Nurses are only one of the more critical healthcare service provider shortages, which includes the following technical specialties: speech/language therapists, respiratory therapists, occupational therapists, physical therapists, pharmacists, radiology technicians, and lab technicians, to name a few.

During the next 10-year period, healthcare facilities will need to fill more than 1.1 million positions.

The nursing shortage (see Exhibit 10) is continuing to result in overcrowding, reduced capacity, discontinued patient programs, and curtailed plans for facility

Exhibit 10

Nursing Shortage — National Supply and Demand Projections



- Significant shortage of this skilled trade
- As baby boomers move through the healthcare system, there will be an increasing need
- Average age of this trade is high at 45 and increasing at twice the rate of other industries

Source: National Center for Health Workforce Analysis, data on supply trends drawn from the 2000 National Sample Survey of Registered Nurses; Bureau of Health Professionals. http://bhpr.hrsa.gov/healthworkforce/reports/rnproject/default.htm

expansions. It is expected to intensify as baby boomers age and their need for healthcare grows. There is also research indicating that adequate nursing care along with additional outpatient surgeries and movement to less invasive diagnostic procedures are all contributors to shortening the average length of stay (LOS). A lack of RNs may drive up the LOS; this is compounded by the fact that nursing colleges and universities across the country are struggling to expand enrollment levels to meet the rising demand for nursing care.

According to a July 2002 report by the Health Resources and Services Administration, 30 states had shortages of RNs in the year 2000. The shortage is projected to intensify over the next two decades with 44 states plus the District of Columbia expected to have RN shortages by the year 2020. This is not an isolated problem to be addressed state by state, but a national issue that will likely require national intervention.

SCENARIO NO. 4 SUMMARY

Universal Healthcare

The U.S. healthcare system was nearing collapse due to high demand, unresolved government reimbursement and regulation, and a lack of capital. This caused the federal government to take over the system and ration healthcare using a model similar to the Veterans Administration/Military system. The result disadvantages nearly all players along the supply chain depicted in Exhibit 2, forcing the identification of niches where competition is minimized and profit margin is available.

The following is the State of the Union address for the first female president who happens to be the daughter of a former president. She has served three years

Scenario No. 4

State of the Union Address

STATE OF THE UNION ADDRESS
JANUARY 20, 2020, WASHINGTON, D.C.

Fellow Americans, the foundation of our union is improving, and I stand here before you today and report positive progress on many fronts: our economy, our government, and our healthcare system....

It is hard to imagine the thoughts that echoed in my father's mind 15 years ago as he stood in front of this body offering his State of the Union address. The times were different, and our vision of the future was not clear. During my father's administration, the concerns for our healthcare system included:

- "Our system will collapse under the weight of the baby boom generation."
- "We cannot go forward without change."
- "The U.S. is the only industrialized nation without a federally managed healthcare system."

Could he have envisioned what we actually faced and overcame? The demand for healthcare services accelerated to the point where we did not have the capacity to meet the need. Congress could not resolve funding and reimbursement issues in light of the debt burden we carried. An unwillingness of our financial markets to make adequate capital available for this market; the growing dominance of the Chinese; the detachment of China's currency from the dollar, which disrupted the world-wide financial markets; the weakness of the dollar in the face of greater demand for Euros and the Asian Tiger; the repeated terrorist attacks on our food and water systems, which ultimately overwhelmed our healthcare system; and a growing number of VA and military health-system users have all conspired to bring down the well-being of our nation.

We moved aggressively. We moved necessarily. We moved with the support of our citizens to confront the issues before us. Our decision to take over the healthcare system was, by necessity, our only choice. Today we stand on solid ground with a single system that serves every American. It is modeled after our VA and military experiences and attachment to the Homeland Security department as another portion of our strategy to defend against terrorism.

In the words of my father, "*We did what we had to do in order to restore faith in our system of government.*"

and is making the State of the Union address to mobilize the country around the need to resolve a series of critical issues.

Implications of Scenario No. 4

- Federal legislation restricts the use of alternative delivery systems requiring the frequent use of a traditional design/bid/build approach.
- Bureaucracy slows the process of construction from concept to facility operations, resulting in a forced rationalization of services.
- Federal funding of training, education, and hiring skilled staffs as well as aggressive pursuit of labor-saving technologies is an intense focus but plagued by bureaucracy, regulation, and funding shortfalls.
- Firms participating along the supply chain are forced to pursue niches where competition is minimal and margins are reasonable.

CONCLUSION

The healthcare design/construction market will exhibit greater disruption in the period leading up to 2020 — more than nearly all other construction markets.

The view of the futures presented here and the prospect that the United States will remain one of the wealthiest countries indicates that an overall favorable environment for healthcare design/construction will continue to exist. The United States is much better positioned than the countries of the European Union to find and implement solutions to the aging of the baby boom generation. With each scenario and the accompanying illustrations, we trust you can envision potential outcomes that will better prepare your organization to face the uncertainty of change. As you consider the implications of each scenario to your firm and marketplace, focus on the strategies and tactics that may be necessary in order to secure success. As was once said, "Good luck is made, not found," and with this effort to establish the potential directions of this healthcare market, we trust we have helped you make your own luck. ■

As you consider the implications of each scenario to your firm and marketplace, focus on the strategies and tactics that may be necessary in order to secure success.

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This study was completed through the efforts of both FMI's Research and Consulting Group. Significant contributors to the effort included Heather Johnson as well as Dennis Doran, Clark Ellis, Hoyt Lowder, Ken Roper, Phil Warner, and Scott Winstead.

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The Dark Side of Work Life: Employee Burnout

Employee burnout is an organizational danger. The following article details its symptoms, causes, effect, and preventative measures.

By Jake Appelman, Dan Wooldridge, and Tim Spiker

Stan is a project manager at a large general contractor. His coworkers describe him as infectiously upbeat and optimistic. Stan has what seems to be a limitless store of energy that allows him to meet the challenges and conflicts of project management with seeming ease. His direct reports regularly come to him for advice on their careers and even their personal lives. As one of the most effective and inspiring leaders at his organization, Stan rapidly rises through the corporate ranks.

Several years later Stan is completely different. He is cynical and frustrated. He no longer enjoys his work, and he does not have the time or energy to develop his team. Over time, his fire simply goes out. His productivity drops, and he regularly makes errors that lead to significant financial losses. Stan vaguely remembers what it was like to have energy, but now, he only feels exhaustion. Senior leaders at the organization remember how successful Stan was at the start of his career, and they cannot understand the gradual erosion in his leadership; they worry that they will eventually have to let this once rising star go.

Although this scenario is fictional, the situation is increasingly common in today's organizations. One of the greatest challenges modern leaders face is the ability to maintain their focus and energy in the face of uncertainty and relentless pressure to succeed. Self-leadership, or the ability to lead within, is essential to maintaining peak leadership over the course of a lifetime. Top-performing leaders build discipline into their lives that sustains them and allows them to meet the trials and conflicts of being a leader.

In the race for more productivity and efficiency, leaders run the risk of seeing their people as a means for production rather than as unique individuals with their own needs and desires. The consequences of this view can be devastating, both personally and organizationally. One of the most dangerous side effects is employee burnout.

In the race for more productivity and efficiency, leaders run the risk of seeing their people as a means for production rather than as unique individuals with their own needs and desires.

Leaders should be cautious about dismissing burnout as a common symptom of organizational life. By hearing off-handed comments such as, "I'm feeling burned out; I think I need a vacation," leaders can make the mistake of assuming burnout is not a significant problem. However, burnout in a clinical sense is much more hazardous to the mental and physical health of an individual. Christina Maslach and Michael Leiter, preeminent researchers in the field of burnout, have identified exhaustion, cynicism, and ineffectiveness as the prominent symptoms of employee burnout.

EXHAUSTION

One of the principle effects of employee burnout is exhaustion. People who burn out can barely summon the energy to get out of bed in the morning. They wake up feeling as if they never slept. Exhaustion makes every project seem immense and every challenge insurmountable. Exhausted leaders cannot invest their time and energy in others because they have to use all of their limited resources to get through the day. A significant characteristic of high-performing leaders is energy, and yet, more and more, leaders take the helm daily with little energy and little margin of reserve.

Exhaustion is not only physical; it's also emotional. A principle symptom of burnout is the loss of emotional energy. Peak leaders are able to harness the power of their emotions as a source of energy, inspiration, and connection with others. When burnout strikes, leaders can no longer engage in challenges or conflicts. They may retreat or withdraw, avoiding conflict, challenges, change, and decision-making. A prevailing sense of being overwhelmed or hopeless sets in.

CYNICISM

Cynicism is especially toxic in an organizational setting because of how fast it spreads. Organizational leaders set the emotional tone for their entire group, and when a leader is cynical, the feeling seeps down through all levels of the organization. A cynical environment encourages employees to take a cold, distant approach to their work. They minimize involvement and begin to disengage. In many ways, this is an attempt to put up a façade of indifference in order to protect themselves from disappointment and exhaustion.

One of the most important aspects of effective self-leadership is the ability to connect to a deeply held set of fundamental values and beliefs. All people have a need to find meaning in their lives. Some people seek meaning in their relationships or religion, while some derive a deep sense of satisfaction from their job. A truly effective leader finds ways to help others find meaning in their work. A burned-out, cynical leader has difficulty seeing daily work as a means for himself and others to live out their closely held principles.

INEFFECTIVENESS

Organizations need to be aware that employees who burn out become ineffective. There is a long-term cost of driving employees to the burnout point, and once crossed, the risk far exceeds the return. Ineffectiveness often leads to feelings of inadequacy as formerly effective employee's performance slowly erodes. As employees lose confidence in themselves, others lose confidence in them as leaders.

ORGANIZATIONAL COSTS OF BURNOUT

Consider the implications of having exhausted, cynical, and ineffective leaders in your organization. Burned out employees show physical symptoms such as headaches, high blood pressure, muscle tension, and chronic fatigue. Mental symptoms include depression and anxiety. Many employees turn to substance abuse to deal with these complications. The cost of treating these symptoms trickles down to employers and then fellow employees in the form of increased insurance premiums.

Many people associate burnout with a sudden "flameout" event. However, the burnout process is far more subtle. Burnout generally takes place over a long period. A person suffering from burnout makes a slow decline from productivity, energy, and excitement to ineffectiveness, exhaustion, and cynicism. This process is often imperceptible to others. Burned-out employees represent a slow, insidious drain on organizational effectiveness.

> **Many people associate burnout with a sudden "flameout" event. However, the burnout process is far more subtle.**

Burnout can also have unforeseen effects on ethical conduct within an organization. Employees may cut corners and take unethical actions in order to protect themselves. For example, these employees may cheat on their timesheets so it appears they worked longer hours. Burned-out workers often justify this behavior on the basis of self-preservation.

An organization that allows burnout will also face great challenges recruiting and retaining younger workers. The baby boom generation, born from 1946 to 1964, defines themselves through their work more than later generations. They are more willing to work long hours and commit a significant part of their lives to work. Later generations such as Generation X (born from 1968 to 1979) and the Millennium Generation (born from 1981 to 1999) view work as one facet of a complete life. These generations are often unwilling to sacrifice their families, hobbies, and interests for their work. Generation X and Millennium employees represent the future leaders of our organizations, and they are unlikely to stay with companies that allow burnout.

Many people falsely assume that burnout is the result of weakness or lack of stamina on the part of the employee, when it actually stems from the organizational atmosphere.

Burned-out employees are also absent far more than other employees. A recent study by the Bureau of Labor Statistics found that employees who take time off from work for stress, anxiety, or related disorders are off the job for an average of 20 days per year. They also have significantly higher rates of turnover and accidents on the job. Research also links burnout to impaired decision-making and increased incidents of workplace violence. One of the ironies of burnout is that any productivity gains achieved by pushing employees over the brink are more than offset by the costs of absenteeism, turnover, accidents, and medical treatment.

In addition to being absent physically, employees who suffer from burnout are more likely to be absent mentally. They lack the mental energy needed to produce high quality, creative work that fuels the bottom line. Perhaps the solution here seems obvious — find all the burned-out employees, and get rid of them. However, that approach will seldom work. Instead, first take a deeper look into organizational practices and behaviors.

Leading researchers in the field of employee burnout feel the root of the problem lies more with the organization rather than the individual. Many people falsely assume that burnout is the result of weakness or lack of stamina on the part of the employee, when it actually stems from the organizational atmosphere. According to the research of Maslach and Leiter, the cause of employee burnout arises from these six dysfunctions between employees and their work role:

Work overload

From an organizational view, workload relates to productivity while to the individual, workload is related to time and energy. Burned-out employees have no time to recover the physical and mental energy needed to work productively and creatively. Work overload often occurs in one or more of the following situations:

- A person may work on a project that is larger than the person's capacity or available resources. This can occur suddenly when a project experiences problems and heroic efforts are needed to keep things together.
- Overload can happen when an organization is growing rapidly while also attempting to stay lean and flat. More work is heaped on good people for long periods of time with no plans for adding capacity to cope with the load.
- Overload can occur over time when a person goes from demanding project to demanding project without a break or time to renew energies. Many high performers burn out this way.

Lack of control

When organizations strip employees of their autonomy to make decisions about how their work is completed, burnout becomes common. A micromanaging supervisory style where employees feel a loss of control over important aspects of their jobs can also lead to burnout. This can also take place in decentralized organizations where a person has responsibility, but is dependent upon others who are not within his or her span of authority. When employees are held responsible for work over which they do not have authority or resources, burnout can occur.

When employees are held responsible for work over which they do not have authority or resources, burnout can occur.

Lack of sufficient reward

Rewards here apply to both extrinsic and intrinsic varieties. The prestige and security of a high-paying job is sometimes reward enough to encourage employees to make sacrifices in other areas. However, a loss of intrinsic motivation from work is a more profound blow to absorb. Consider the example of a project manager who gains a deep sense of reward for building a complex structure. As the project manager moves up through the organization, he or she has more leadership responsibility and less management responsibility. The extrinsic reward of more power and increased salary may not make up for the loss of intrinsic hands-on rewards.

Breakdown in community

The reality of organizations is that their foundations lie in personal contact. Interacting with coworkers is a way to form a shared ideal. A lack of job security, overemphasis on individual contribution, and inter-departmental conflict all contribute to the loss of community at work.

Unfair treatment

A fair workplace has foundations in three factors: trust, transparency, and respect. Too much focus on short-term bottom-line goals makes employees feel they are valued only as far as they fit into corporate plans. Disproportionate distribution of rewards such as salaries of senior executives that are unreflective of their contributions creates an environment of unfairness as well.

Conflicting values

A lack of alignment between organizational values and personal values can lead to burnout. This is especially common when an organization claims a set of values and acts contrary to them. When employees feel they have to make excuses for policies that they strongly disagree with, burnout is a common occurrence.

The reality of organizations is that their foundations lie in personal contact. Interacting with coworkers is a way to form a shared ideal.

The recipe for burnout depends on the combination of these six factors. People have different predictors for burnout based on their unique needs. For example, in the early 1980s, Apple Computer programmers regularly worked 100-hour weeks to design the original Macintosh computer. These workers actually slept at work. Apple employees were strongly motivated by company founder Steve Jobs, who convinced them they were building something "insanely great" that would "put a dent in the universe." Despite the crushing workload, Apple workers built a strong sense of community. Jobs' vision enabled people to buy into the concept that Apple was a group of counter-culture geniuses going up against the establishment of competitors such as IBM. They also worked towards the same values, and received sufficient rewards.

However, other factors contributed to burnout in the Macintosh project. Despite his vision and charisma, Steve Jobs was a notorious micromanager who extended his influence into the personal lives of his employees. This contributed to a lack of control among programmers. Jobs also treated his employees unfairly. He used a bullying leadership style and routinely used "this sucks" as a favorite critique. These behaviors led to many incidents of burnout in the Macintosh project. As a result, Apple lost some of its most-talented employees, and the Macintosh project launch suffered significant delays. All of the programmers at Apple had their own distinctive combination of motivators, needs, and personal limits that contributed to their ability to withstand burnout.

The effects of employee burnout paint a bleak picture of organizational life. However, consider the three main symptoms of employee burnout and their opposites:

- Exhaustion — Energy
- Cynicism — Optimism
- Ineffectiveness — Effectiveness

Leaders who effectively focus on their people and create meaningful, rewarding work breed energy, optimism, and effectiveness. This investment delivers incredible dividends in the form of trusting, supportive relationships, increased productivity, and creative, high-quality work. Organizations that build systems and practices that enrich their employees' lives and prevent burnout can achieve a distinct competitive advantage over their competition. Some of the ways organizations can prevent burnout are:

Ensure workloads are reasonable and sustainable

One common challenge in the construction industry is tight deadlines. When a project is behind schedule, employees are expected to put in long hours. This is especially true in leadership positions. A recent survey of senior leaders found that most leaders work an average of 65 hours per week. Organizations must have the courage to ask themselves whether they are willing to sacrifice some of their profit today to ensure they will have an outstanding organization tomorrow. One of the ways organizations achieve lasting results is by retaining talent through the allocation of reasonable and sustainable workloads. While most organizations state that long-term sustainability is desirable, their actions are often contradictory. One way to address this contradiction is for individual leaders throughout the company to develop a personal message about the negative organizational consequences of burnout. This message could include much of the information shared in this article.

Leaders who effectively focus on their people and create meaningful, rewarding work breed energy, optimism, and effectiveness.

Empower employees to take ownership over their own work

Giving employees a say in how they perform work is a key part of avoiding burnout. Rigid procedures for completing work often cause employees to detach themselves from their jobs. At one end of the spectrum is the Brazilian company, Semco, led by Ricardo Semler. There are no job titles or descriptions at Semco, and workers choose their own training. While this may seem like a recipe for anarchy, Semco tempers this freedom with personal responsibility. Employees are responsible for setting and meeting their performance goals; the manner in which they achieve those goals is up to them.

Design systems that are fair to employees and reward effective performance

"No news is good news." Have you ever heard this type of statement from leaders in your organization? If so, recognize that this is reflective of an organizational mentality that breeds burnout. As a leader in the organization, part of your essential role in guarding against burnout is to recognize the accomplishments of people in the organization on a regular basis. Doing so often requires nothing more than investing a few moments to observe what is being done well and communicating that to others.

Additionally, compensation needs to be a consideration. Is your organizational compensation system set up in a way that rewards neglect of all non-work areas of life? Does the organization view ideal compensation as the lowest possible wage? This thinking is dangerous burnout fuel. Organizations should modify compensation systems that disproportionately reward only those who sacrifice all other areas of their life for the firm and thereby lead themselves into inefficiency via burnout. Surveys that ask for employee opinions on company compensation can help. A key concept to remember when evaluating the relationship between workload and compensation is to consider whether the behaviors rewarded in the compensation system are sustainable for everyone involved over an extended period.

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Build a supportive community at work

A prime example of a company that builds a supportive community is SAS Institute in Cary, North Carolina. SAS is the largest privately held software company in the world with revenues greater than $1 billion. Company Founder James Goodnight creates a culture of support by offering an extensive menu of employee benefits, including free health insurance, onsite medical staff, a 36,000-foot workout facility, onsite childcare, and three subsidized cafeterias.

While competing Silicon Valley-firms such as Oracle expect their employees to work 60- to 80-hour weeks, SAS encourages employees to work a 40-hour week. These benefits create a culture of loyalty in which turnover rates are traditionally

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lower than 3%. Jeffrey Pfeffer, a Stanford University business professor estimates that SAS saves more than $70 million per year in turnover costs. SAS uses a supportive community not only to avoid burnout and increase engagement but also to achieve a strategic advantage.

Create meaningful work

Creating meaningful work requires leaders to ask questions about what connects people to the work they are doing and to reinforce that personal connection regularly. This is especially critical when difficulties and challenges arise. However, this is only effective if leaders in the organization truly care about the individuals with whom they have such discussions. Leaders run the risk of losing trust with those whom they are leading if their approach is manipulative. Assuming an organization's overall purpose is one that is compelling throughout the organization, it is also an effective leader's duty to help people in the company connect the value of their everyday work to the long-term purpose of the organization. If the sole purpose of a company is merely to fill the pockets of its owners, few employees will see the purpose as compelling.

One of the common denominators of each of these solutions is that senior leaders in an organization must drive them. This requires leadership that transcends a shortsighted view of profit and treats employees as the focal point. Companies that do not tolerate burnout and build systems to avoid it send a strong message to their people about their core organizational values. When leaders focus on their people and show consistent, genuine concern for others' well-being, they create a foundation for a high-performance culture that fights burnout. ■

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