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FMI Quarterly **ISSUE THREE** 2016 Leading in Uncertain Times: Adapt to Win Sponsored by D ZURICH

Leading in Uncertain Times: Adapt to Win

his edition of the "Quarterly" focuses on helping leaders and organizations understand what it takes to operate in a VUCA world.

Defined as "volatile, uncertain, complex and ambiguous," VUCA certainly describes today's engineering and construction industry.

With the rapid pace of change transforming the global business landscape, company leaders are feeling ill-equipped to navigate today's constantly evolving industry environment. Classic approaches to strategy such as three- to five-year business plans that assume predictability in financing, economic cycles and competitive landscapes have become irrelevant and no longer work. In fact, organizations that are reactive versus proactive in this environment are more likely to be left behind.

What FMI's research shows is that agile leaders and organizations are the ones that can truly compete to win in a VUCA world. These include entities that are adept at learning from experiences, have processes and systems enabling them to react quickly, and are willing to change in order to take advantage of opportunities. In this issue, we explore the concept of agility both at the individual leader level and at the organizational level.

We've also taken a fresh look at how to create effective and adaptive strategies in a VUCA world. What we're finding is that organizations are dealing with a high degree of variability in their planning processes. Leaders are now focused on developing competency skills, grooming workforces that can react quickly under a variety of scenarios, and capitalizing on the opportunities that present themselves.

Finally, we introduce a practical framework for adaptive strategy that allows leaders to assess their business surroundings—or context—to identify and monitor key factors influencing their daily "ecosystem." Even though there is no one right way to plan for the future, finding out which drivers and indicators have the most impact on your firm is a starting point. Anticipating change is crucial as firms position themselves for the major shifts that occur, not just in the next few years, but through the next decade. The firms that succeed will be masters of agility, led by executives poised to make the best decisions for their company.



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Beyond the Day to Day: Strategic Thinking in the VUCA Environment



By Jake Appelman and Tim Tokarczyk

S ix ways leaders in the construction and engineering field can go beyond putting out day-to-day fires and think more strategically in today's VUCA environment.

Every few years a thought leader in the industry writes about the unprecedented rate of change in our current business environment—and he or she is always right. Add in a few quotes about exponential shifts citing Moore's Law and cautionary tales about being a Blockbuster in a Netflix world; stoke some fear about you or your business becoming obsolete in a robot-driven, A.I. world; and you have enough for a blog post or white paper that may drive your CEO to "do something about it." Usually we see this resulting in some initiative designed around "building a sustainable organization," developing a strategic plan, becoming a "learning organization" or developing "change readiness." All these are perfectly reasonable initiatives that often fail spectacularly without considering the one factor that has shifted little in the face of all that rapid change: ourselves.

It is often a preconceived notion that we are logical and objective observers who see the world through an unvarnished lens. However, when it comes to reacting to change, we often stand in our own way.

Think back to the Great Recession of 2007-2009. How many of you spoke with someone after the crash who claims they "saw it coming" or they "knew it would happen"? Boardrooms and construction sites are loaded with these self-edited stories. And while the Great Recession may now be in our rearview mirror, economic and industry uncertainty still prevail.

In this article, we explore the current VUCA environment, outline the implications for construction and engineering firms, and give you six ways to rise above the rhetoric and make good decisions in even the most uncertain circumstances.

Rational Versus Irrational Thinking

In the book "You Are Not So Smart," author David McRaney examines a psychological concept called naïve realism. This is the belief that we see the world rationally and free from bias. If you were to ask the average leader in the industry to justify any decision that he or she made—whether that was to bid on a specific project, to hire a new estimator or to pursue a new market—most would state emphatically that the decision was based on careful rational analysis. The leader would point to facts and data, expert opinions and/or previous experience to prove his or her point. Put simply, we generally believe we are rational, clear-minded thinkers.

The truth is humans rarely (if ever) think in a manner that's free of personal bias, especially when it comes to emotionally charged issues. Consider the example of a team of construction executives that sits down to develop a strategic plan in the current environment, where:

- Since 2009, 11 million jobs have been created. The stock market has tripled, and the unemployment rate has been cut in half. Construction volumes are nearly back to pre-recession levels and we should invest for growth.
- The recovery since 2009 has been one of the weakest in history. The national debt has ballooned, and wages for most Americans are stagnant. Millions of Americans have given up looking for work altogether. The economy has been propped up by an overactive central bank through quantitative easing and cheap money, we are headed for a meltdown, and the only question is when that will happen.

Equipped with these hard facts, the same team that sat down with the goal of doing some strategic planning is suddenly beset by all the devils of individual beliefs, biases and cognitive black holes associated with these and other cold, hard facts. The result of this exercise is usually a strategic plan that falls prey to the polar responses of oversimplification or over-complication. Or, worse yet, it leads to a group that throws up its hands and decides to focus on the tangible work of managing operations.

Recognizing these biases in ourselves and in others is one of the fundamental challenges of modern leadership and critical in the process of developing one of the few enduring sources of competitive advantage, the ability to think strategically.

Key VUCA Trends in Engineering and Construction

For the modern construction leader, VUCA—a world characterized by volatility, uncertainty, complexity and ambiguity—is such a part of daily leadership that it almost fades into the background. In fact, it often moves to the forefront when something radical takes place, only to recede once the news cycle wears out. Consider these current examples of VUCA trends in the design and construction industry:

- The U.S. oil and natural gas boom, driven by fracking and spurring rapid growth of domestic industrial construction, collapses in the face of a protracted price war with OPEC.
- The U.S. housing market rapidly recovers in a low- to no-interest environment, but only in pocketed segments led by coastal cities.
- Construction put in place nears a pre-recession high, all while consumer confidence and unease reign strong.

- BIM, prefabrication and modularization represent a source of significant technological advantage to some and a competitive threat to others.
- Megaprojects emerge, but only a small slice of E&C firms with the resume and balance sheet to support them can compete for these huge opportunities.
- Mega engineering firms continue to add construction businesses; the largest get larger and crowd out the middle market.
- An election cycle brings uncertainty for taxes, immigration law and unionization.

Faced with these and other VUCA trends, many leaders respond in predictably irrational and polarized ways (e.g., a feeling of resignation which leads to foregoing any attempt to plan and just "take what the market gives us," or attempting to control factors that prove uncontrollable by analyzing and planning for any and all contingencies). The best response usually lies somewhere in the middle of these responses: constantly calibrating between the two poles while remaining balanced and never tipping over to the extremes.

Thinking Strategically in a VUCA World

The emotional toll of VUCA on leaders can create an abundance of problematic issues. For example, leaders can easily feel helpless, hopeless and continually at risk. The unpredictability of the unknown erodes confidence, with many leaders reacting to the feeling of uncertainty by speaking with even more conviction and greater certainty as a coping mechanism. These negative emotions and their subsequent actions can lead to one of two extremes—either feeling paralyzed by the uncertainty and shutting down, or the opposite, needing so badly to feel like you're making progress that you charge ahead without a clear plan. In this scenario, many leaders focus on easy tasks that give them a sense of accomplishment—even if those tasks aren't strategic and aren't moving their teams or organizations forward.



Source: Model is based on in-depth industry research

For example:

Pick any leader in your organization and ask him or her, "How are you?"

The first response you'll likely hear is "busy."

That's because so many leaders are feeling the pressure of the VUCA environment that their only response is to work harder.

The reality is that far too many leaders are scrambling, trying to keep up and are too busy to plan or think ahead. Key decisions that have enterprise-level impact (like opening a new office, moving into a new market sector or taking on a larger project than ever before) are given insufficient thought. Leaders make decisions quicker and with less input from others. With the mounting pressure to make a quick decision, leaders move forward without fully considering a broad perspective of opinions.

The good news is that leaders can effectively navigate in the VUCA world, think more strategically and look beyond the day-to-day "fires" to a more holistic view of the future. Here are six recommendations for leaders to consider, all of which require deep reflection, personal insight and disciplined practice to implement:

- 1. Practice mindfulness. The mention of meditation or the term "mindfulness" to many engineers and contractors steeped in the science of building and designing actual tangible things often elicits a groan or rolling of the eyes. And yet, hard research from studying the highest performers in nearly every field consistently finds that all use some form of meditation, focusing or breathing practice. True strategic thinking almost never happens in the "busy mind" where attention is fractured across multiple competing priorities.
- **2. Build solitude for deeper thinking.** Many executives fall into the trap of scheduling meetings, calls, site visits, client dinners and association meetings until there is no "white space" on their calendars to think deeply. The most effective strategic thinkers build islands of uninterrupted time into their calendar to reflect. Then they guard this time zealously and look at it as an investment versus a cost.
- **3.** Blend data with instinct. Effective strategic thinkers recognize the value of both instinct as well as data. They use hard data to make decisions, while simultaneously trusting the value of years of accumulated experience and gut instinct. Consider, for example, the two contactors that are examining a location for a new office. One decides to open an office because the market is hot and because it has a client there and a PM who can run the office. The other embarks on a rigorous assessment of the potential market's competitive landscape, analyzes its potential market share, looks at the underlying economic trends and makes a rigorous assessment of its potential leaders to run the office. The former takes great risk in trusting instinct without the supplement of fact-based analysis.
- **4. Combine decision-making and diversity.** Executives are at great risk of becoming insular or surrounding themselves with others like them, both of which create a deadly echo chamber of similar views. And yet, discerning good advice from bad is a critical piece of strategic thinking, and informed perspective is critical. Strong board governance is often an essential resource to drive strategic thinking—with the caveat that a truly effective board is rigorously selected, is clear on its purpose and brings perspective outside of the company.
- **5. Practice scenario planning.** Trying to predict or forecast a long-term future is difficult in a VUCA environment and runs the risk of being right but too early to

the game (or being wrong and overcommitted). This can push executives to dismiss planning as futile or to take the polar approach, attempt to predict factors outside of their control and plan for every contingency. Scenario planning, on the other hand, takes the middle ground by planning for various scenarios such as continued growth, significant slowdown, full-on recession or "muddle-through" economic conditions.

6. Use organizational purpose and values as guideposts. A clear, authentic core ideology comprising core purpose and core values can serve as the ultimate shelter in a VUCA storm. While many companies have some form of core ideology, the truest test is a company that is so committed to that ideology that it would rather lose money than counter that belief. While this may sound simple in theory, imagine the discipline and focus it would take to say no to work that doesn't fit with a company's purpose and values when the market is booming—or let go of a strong performer who doesn't fit the culture. That's where a clear dedication to organizational purpose and values can stand as a key differentiator between leaders who think rationally and those who apply a more irrational approach to their roles.

Applying the Key Principles

In the midst of an economic recovery, the natural temptation is to postpone the critical work of strategic thinking. Often, it seems counterintuitive for most engineering and construction executives to slow down, pause and think deeply about their businesses in the face of rapid growth and opportunity. Ironically, this is the perfect time to take these steps. Armed with awareness of our own natural biases and the human response to a VUCA environment, modern construction leaders often wind up expending great amounts of energy on the countless factors out of their control or to take control of the one factor over which they truly have control: themselves. By using the advice outlined in this article, industry leaders can not only effectively tackle the challenges that they're facing right now but also prepare for success in the future.



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Four Cornerstones of an Adaptive Strategy



By Richard O. Tison

We adding companies are using context analysis to drive their organizations forward when the foundation for strategy formation is shaky and untenable.

Baseball legend Yogi Berra famously quipped that, "It's tough to make predictions, especially about the future." His assertion seems even more accurate today when the pace of change in business, geopolitics, technology and nearly all facets of life seems to be in a constant state of acceleration. Classic approaches to strategy leave business leaders charged with navigating today's environment feeling ill-equipped. The notion of a "normal" planning cycle no longer applies, harkening back to what we may now view as simpler times. In fact, for the majority of engineering and construction companies, standard three- to five-year business plans are no longer relevant in today's constantly evolving business environment.

This is a fundamental challenge and frustration for many company leaders. In order to succeed, strategy must align with current and anticipated business conditions while those conditions are ever-changing and hard to predict. The question that is often asked is: How can leaders use strategy to drive their business forward when the foundation for strategy formation is so untenable?

The answer to strategy's unfortunate reality comes from strategy itself. Put simply, strategy is no more than understanding the current situation, deciding how best to respond, and acting on those choices. A general assessment of operating in today's world is that context does not change in easy to foresee ways.

To that end, we present a framework for adaptive strategy that allows leaders to comprehensively assess their business surroundings—or context—in order to identify and monitor key factors influencing their daily "ecosystem." This allows leaders to develop strategy based on that understanding and then monitor those key factors and adjust as needed throughout implementation. The model presented is based on several years of successfully analyzing context during strategic planning endeavors with hundreds of executive teams in the engineering and construction industry.

Why Context Matters

Developing strategy starts with an understanding of the current context. Context is the ever-changing picture of your business and its environment that blends the macro drivers of demand, the competitive landscape and customer needs with a company's capabilities and constraints. Understanding context creates the foundation for developing meaningful strategy. An effective assessment of context also allows leaders to identify opportunities in the marketplace that the company can exploit—and the challenges it must overcome in the process.

As an example, understanding the outlook for demand through a market forecast without understanding customer and competitive implications is not enough. What if demand is growing but customers are unable to fund necessary investments, as is the case in U.S. water infrastructure? Or what about a segment with significant long-term drivers for demand that is facing tremendous regulatory uncertainty, as is the case in health care design and construction?

In both instances, understanding the drivers of market demand is necessary but not sufficient for making strategic choices. Leaders must also understand how those drivers will translate to customer demand, how that demand is currently being served, how it may be served differently in the future, and how well their business can serve customer needs relative to the competition.

Proactive leaders keep a pulse on key factors influencing their business environment and monitor those external and internal dynamics on an ongoing basis. Indeed, they anticipate and prepare for different contingencies while taking a probabilistic view of the future as it relates to the factors influencing the big picture.

For example, a decline in tax dollars allocated to K-12 education is never good news for a business that depends on those dollars for projects. The relevant question, however, is not simply the directional question—is funding increasing or decreasing? It is instead one of magnitude—at what percent decline in school funding would K-12 no longer be a priority segment for the business? Identifying the critical factors—and understanding the boundaries of any strategic option—allow leaders to know when to make a change instead of waiting for the negative effects to show up on financial statements (a lagging scorecard for business decisions).

The Power of the Big Picture

A firm's strategic direction ultimately depends on gauging the business environment correctly. Indeed, everyone needs to see and understand the big picture. Unfortunately, when developing and implementing strategy, companies generally lack a meaningful model or tool for assessing and monitoring context. To help fill this gap, FMI has been providing guidance on this topic for several years. The culmination of these efforts, the "4C framework," provides a practical tool companies can use to evaluate critical elements of context.



Source: Model is based on in-depth industry research

Following is a breakdown of the 4C model and recommendations for leveraging them in today's constantly evolving construction and engineering environment:

Climate

Some of the most common mistakes we see companies make include complacency around market understanding; not conducting thorough research on external market forces (e.g., laws and regulations, technological advances, socioeconomic changes, etc.); and a leadership team that's slow to react and respond to changes.

By understanding the industry outlook for the next six to 12 months, firms can essentially get outside of their own four walls and develop adaptive strategies that factor in not only their own activities, but also those that are taking place around them.

Stock market activity, GDP growth, labor market trends and building cost fluctuations are all examples of key economic indicators that can have a significant impact on a firm's short- and long-term business strategy. These indicators will also help answer questions like:

- What is the demand outlook for our services?
- What are the drivers of that demand?
- How do we anticipate these demands changing over time?

Customers

Not all customers are alike. In fact, research indicates more partnering or longterm relationships among owners, contractors and designers, as well as increased specialization to suit the customer's unique needs. This, in turn, implies the importance of a good match between firm and client.

For example, today's engineering and construction firms realize that customer feedback and maintenance of existing customer relations are crucial to their endurance. Some vital questions to ask when looking at your client base include:

- Who are our current and prospective clients?
- How do they procure our services?
- Why do they buy our services?
- How do they perceive us relative to our competition?
- Are our clients well-positioned for the future?
- Would our clients recommend us to another company?
- How convinced are our clients of our value?
- Where do our missions overlap and where do they differ?

Exploring these questions will not only ensure that you garner honest feedback in areas for potential improvement, but they also reveal the efficacy of your business development and marketing efforts.

Competitors

Short of devolving into commoditized low-bid operations, the smart engineering and construction firm wants to find a long-term space of its own by differentiating its services and targeting its audience with acuity. But when owners are inundated with dozens of proposals for a single project, individual strategy is often muffled by cries of "me too!" When everyone claims to be customer friendly, on budget, on time and superior in technological capability, there is no differentiation. The challenge is for firms to ask themselves, "What makes us unique?"

An effective way to assess your customers' needs is by modeling your strengths and weaknesses, and those of your competitors. Ask questions like:

- Who are we competing with to fulfill customer demand?
- How do they compete differently from us?
- How do we anticipate the competitive landscape changing over time?
- Where are our competitors' vulnerabilities?
- Where do our strengths overlap?
- Where are our services and strengths uncontested?

By building a holistic view of all advantages encompassed by your firm's name its resources, people, client relationships, assets and culture—you can begin to move beyond the value-cost tradeoff and create new demand.

Company

In today's fluctuating economic environment, design and construction companies must continually re-evaluate their cultures, core competencies and relationships; assess their competitive environment and client base; and implement strategic and operational changes to adapt to their new surroundings. If this sounds like it's easier said than done, there are several paths that design and construction firms can follow to exploit their unique attributes and features. A good starting point is to simply ask yourself questions like:

- How well-positioned are we to exploit market opportunities?
- What are our primary capabilities and constraints?
- What are the value drivers in our business that we can leverage or exploit to outperform the competition and take advantage of market opportunity?

Next, focus on improving your corporate strategy. Use resources efficiently by applying them to the right markets, sectors and clients, for example, and consider sectors related to your core competencies for opportunities to expand. Highlight your firm's strengths and the services that set it apart. Identify the skills needed to meet future company goals, ensuring that new hires and existing employees can meet future challenges. Finally, align with strategic partners. Collaboration offers an opportunity for growth as well as a way to augment backlog during slow times (and scale up during busy times).

If Change Is Inevitable, It's Time to Brace for It

The pace of change in business—and life in general—isn't expected to slow anytime soon. If anything, there is greater evidence that the pace of change in the engineering and construction industry has nowhere to go but up. Knowing that traditional planning methods no longer suffice, leading engineering and construction firms are finding new and innovative ways to stay out in front of the changes (or at least keep pace with them) while remaining profitable, productive and responsible.

In this environment, construction and engineering firms can no longer focus on setting direction, developing plans and then implementing those plans. Instead, they must clearly understand why certain strategic options are more attractive than others, and then monitor the situation throughout implementation to make sure that prioritization still holds. Taking this course requires a deep understanding of context and the ability to track in real time (and project far enough into the future) to commit the resources of the business. And, while Yogi Berra's assertion may still hold true, it's no excuse not to plan a brighter future for your business.

One strategy expert, Ron Ashkenas, summed up the value of context in relation to adaptive strategy well by noting that managers at all levels tend to assume that their people understand the firm's overall strategy and how their work contributes to it. This is particularly true if high-level presentations, town meetings and videos about the strategy have been disseminated to those team members.

"While these are necessary vehicles for creating context, they are insufficient for really aligning a company's strategy with various goals throughout the organization," he writes. "In addition, managers at all levels need to periodically bring people together to active-ly work through the connections. And this needs to be done not just once during the annual planning cycle, but at regular intervals so that new projects, initiatives, and issues are incorporated into the overall strategic fabric."¹

¹ Ashkenas, Ron; How Leaders Create the Context for Strategy Execution. Harvard Business Review.



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History Repeats Itself: A New Wave of International Interest in the U.S. Infrastructure Market



By Alex Miller

irroring the 1970s, when large international firms first targeted acquisitions to enter the U.S. construction market in a significant way, new international players are emerging alongside traditional international competitors to target the U.S.

Beginning in the 1970s, large European construction firms began targeting acquisitions in order to compete in the U.S. market. This process was accelerated by the collapse of the OPEC boom, particularly for German firms that relied heavily on oil-exporting countries. Thus, in 1979 Bilfinger Berger became the first major international player to purchase a significant contractor with its acquisition of Fru-Con. This was soon followed by Philipp Holzman's acquisition of J.A. Jones in 1980.

This trend continued over the next few decades as additional, large European firms (e.g., ACS/Dragados, Hochtief, Balfour Beatty, Ferrovial, etc.) and firms from other developed markets (e.g., Japan, Australia) entered the U.S. market both organically and through acquisition. Today, competitors from these traditional markets continue to pursue additional market share in the U.S. In fact, nine of the current 50 largest contractors (according to ENR's 2016 Top 400 Contractors) are internationally owned, eight by traditional international competitors from developed economies.

In this article we'll explore the current state of foreign interest in domestic E&C firms, including an emerging group of new international players, and outline the implications and recommendations for companies operating in the U.S. market.

History Repeats Iself

In the years leading up to the recent oil price decline, most international expansion among large E&C firms focused on firms from developed economies entering emerging markets—and was primarily driven by commodities. In 2014, for example, the transformational M&A transactions in the E&C industry (i.e., Aecom/URS; SNC/Kentz; Amec/Foster Wheeler) which defined the year were in large part driven by a desire to acquire capabilities in the oil and gas segment and a foothold in the African, Middle Eastern and Latin American markets. Now, mirroring the 1970s—when large international firms first entered the U.S. in a significant way—this trend has reversed. The recent collapse of commodity prices (much like the collapse of the OPEC boom), coupled with global economic uncertainty, has diminished the attractiveness of many emerging markets. Today, alongside the familiar international firms, new players are emerging from around the world, with cash earned when commodity prices were high and strategic objectives to deploy capital in developed markets.

Many of these new competitors have been working predominantly in emerging markets, including Africa, Latin America and the Middle East, and are now looking to gain market share in developed markets. Some of these firms are simply looking to diversify out of commodity-driven economies, while others have grown too large for their current market and must expand internationally in order to utilize the resources acquired.

An extreme example of the second dynamic is China, where over the past decade contractors have grown significantly and built substantial capabilities as a result of the investment in Chinese infrastructure. Given the uncertainty in the future of Chinese infrastructure spending, these firms are now pursuing international projects. To date, they have been most active internationally in Africa, where:

- 1. Commodity prices drove the need for infrastructure.
- 2. The Chinese development bank was willing to finance infrastructure projects.
- 3. Chinese contractors could import labor to complete the work.

Recognizing the instability of this dynamic and the inability to operate in this manner in the U.S., major Chinese firms have joined firms from other markets in their pursuit of United States market share, both organically and through acquisition.

> Of the 50 largest global contractors according to ENR's most recent Top 250 Global Contractors, 17 are Chinese, accounting for nearly \$560 billion in 2014 construction revenue. However, an astonishing 90% of that revenue was earned in China.

Key Factors Driving Interest in the U.S.

For global firms (or those with a strategic desire to expand internationally), deciding where to make investments should be an exercise in understanding the market risks and expected return from said investment. As shown in Exhibit 1, the U.S. provides an adequate, if unspectacular, outlook when comparing expected market growth with country risk.

According to recent forecasts, China, India and the U.S. will account for over 50% of global construction growth in the next 20 years. However, as it relates to the U.S., that is more a function of size than superior growth rates. FMI expects the U.S. construction market to grow 4.4% annually through 2020, a rate impressive for a developed market of its size but not overly impressive. Similarly, the U.S. rates favorably when considering



market risk but is not superior. In fact, according to The PRS Group, a global leader in quant-driven political risk and country risk forecasts, the U.S. rates as the 55th least risky of 72 countries when considering a blend of political, financial and economic risks.

So while the U.S. provides an adequate risk-adjusted return profile, international firms continue to pursue expansion into the U.S. at an accelerated rate for additional reasons, including:

Big, Stable, Growing and Open Market

The U.S. is the second-largest construction market in the world and the largest developed market. As such, it provides assurance that market swings (both up and down) are less severe than those of smaller, emerging markets. For example, during the Great Recession, U.S. construction put in place declined by nearly a third from 2006 (the highest point) to 2011 (the lowest point), but only by 3% when removing residential construction. In fact, during that same time period, nonbuilding construction put in place grew by 26% as the public markets invested in order to stimulate the economy. In addition to its size, the domestic market continues to grow and welcomes new market entrants across sectors (i.e., public transportation, private manufacturing, oil and gas, etc.). As stated earlier, China, India and the U.S. are expected to account for a majority of the global construction growth in the next 20 years. However, the inherent barriers to entry in both the Indian and Chinese markets deter new competitors and provide a less attractive alternative for resource investment.

Fragmented Market and Competitive Landscape

One of the largest misconceptions outsiders have about the U.S. is that it operates as a single entity. In some ways, it more closely resembles Europe, with multiple markets operating independently of each other. This is especially true of public infrastructure procurement, where decisions are made at the state or local level. In fact, the California, Texas, New York City and Florida markets would each be one of the 20 largest countries in the world by construction put in place. And while the overall U.S. is expected to expand by 4.4% through 2020, California and Florida (the largest and fourth-largest states by construction put in place, respectively) are expected to grow by 9% and 8% annually through 2020. Unsurprisingly, these two markets attract significant international interest.

Ability to Export Competitive Advantages

The most obvious example of this dynamic is the interest in the projected Public-Private Partnership (P3) market in the U.S. Many international players (predominantly European) see their expertise in project financing and concessions as a competitive advantage for P3 projects in the U.S. Of the 16 current, domestic P3 transportation jobs (highway, bridge and rail), 11 have an international firm in the design-build contract. That number is 13 when including Lane Construction, the large heavy/civil contractor who sold to Salini Impregilo (Italy) in 2015.

Ability to Import Competitive Advantages

Certain acquirers specifically target companies with distinct competitive advantages that are transferable to their existing markets. This can be related to market trends (e.g., ability to perform under alternative delivery methods), customers (e.g., pursuing companies with a customer base poised to expand internationally) and operations (e.g., technical capabilities which could be leveraged on a global basis).

Developed Market Conditions

As a developed infrastructure market, the U.S. provides additional security, including favorable payment terms, reduced compliance risk and stabilized currency. While margins are often lower in the U.S. due to increased competition (a byproduct of the open market), the payment terms are more favorable and secured. Large international firms that pursue infrastructure projects in emerging markets often find higher margins but delayed payments and higher client credit risk. Additionally, the enterprise risk related to potential compliance issues is reduced in the domestic market, and, over the long term, U.S. dollars are the safest currency investment.

Assessing the Top-Five Implications for E&C Firms

International competition in the U.S. construction market has been around since the 1970s and is not a revelation for domestic firms. However, the current market conditions outlined above create new dynamics that domestic firms should consider, including:

- 1. Increased M&A activity in the U.S. and internationally. History has produced mixed results for international competitors entering developed markets (specifically the U.S.) organically. The desire to gain market share in these markets is already resulting in increased international consolidation. In fact, for specific market segments, the only hindrance to increased M&A activity in the U.S. is the lack of motivated sellers.
- 2. Multiregional building contractors and large heavy/civil contractors remain the most attractive assets for international acquirers. International firms remain interested in large, technically proficient contractors that can provide

significant and immediate market share. Additionally, civil contractors with the capabilities to execute large, complex infrastructure projects provide a conduit for international firms to export competitive advantages, including project financing and technical capabilities.

- **3.** International competition is beginning to penetrate less traditional markets. In addition to the building and civil segments, new players have emerged in less traditional segments such as light industrial, water, renewable energy and traditional power. This includes traditional contractors as well as engineering and design-build firms, as many of these segments are more likely to procure work through design-build or other alternate delivery methods.
- **4.** Active markets or regions will get more competitive. As mentioned above, large geographic markets (e.g., California, Texas, Florida and New York) have been a focus of international expansion for many decades and continue to attract attention today. These markets are projected to represent nearly 40% of the total U.S. construction put in place for the next five years, and competition will continue to increase in those geographies.
- **5. Opportunities for joint ventures exist as a strategic option for many domestic firms.** Increased interest in the U.S. market provides local or regional firms a potential avenue for competing on larger, complex projects through joint ventures or other partnerships with multinational firms.

While the majority of historic international interest has predominantly concentrated on megaprojects or large, multiregional contractors, the increased fervor over the U.S. outlined above is leading international firms to explore new acquisition opportunities, including midsized firms and new market segments. For specific companies, the increased interest presents an attractive exit alternative; for others, it could result in new competition with an impact on go-to-market strategies. Either way, the interest in the U.S. is creating new competitive dynamics throughout the industry, and domestic firms need to be aware of the impact this trend is having on their respective markets.



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Looking to the Future: How E&C Firms Can Leverage Long-Term Incentive Plans



By Sal DiFonzo and Priya Kapila



Retaining key employees has become a salient issue in the engineering and construction (E&C) industry as unemployment rates continue to drop (below 5% in the general economy and below 6% in the E&C industry). Rather than wait until it's too late, now is the time to consider strategies to keep executives and high-potential employees from departing and defecting to the competition. This is quite a change from 2011 when industry unemployment rates hovered around 22%; but it's not insurmountable.

Management succession is also impending as baby-boomer owners exit the workforce at an average of 10,000 individuals per day. In "FMI's Ownership Transfer and Management Succession Survey," 76% of owners over age 50 planned to retire in the next 10 years, but less than half were actually working on a succession plan. Concurrently, a new crop of millennial workers is entering the workforce, many of whom lack the necessary skill sets and experience to effectively take over for the departing boomers.

The good news is that there are ways to offset these challenges and ensure long-term growth and profitability in the E&C field. A long-term incentive plan (LTIP), for example, is an effective tool for supporting retention and management succession objectives. An LTIP can also support the business strategy by driving long-term performance. The following article provides an overview of LTIPs and shows how companies use them in today's engineering and construction environment and uncertain labor market.

What Are Long-Term Incentive Plans?

Often referred to as non-qualified deferred compensation plans, LTIPs differ from qualified plans (e.g., 401(k)s and employee stock ownership plans) because the company itself can select who is (or isn't) eligible for the plan. "Deferred" refers to the payout horizon. Whereas incentive plans typically pay out as or when they vest, deferred plans pay out sometime at a later date and, thus, defer the taxable event until the future payout. Both qualified and non-qualified plans are generally subject to the Employee Retirement Income Security Act of 1974 (ERISA). However, non-qualified plans typically satisfy the "top-hat" exemption and are therefore not subject to many of the more onerous ERISA requirements. A distinct characteristic of non-qualified plans is that allocated awards for participants are subject to creditors of the employer in a bankruptcy, whereas assets in qualified plans have protection from both employer and participant creditors.

Exhibit 1 shows the prevalence of LTIPs for the last five years (information is based on "<u>FMI's Executive Compensation Survey</u>"). As shown, CEOs have LTIPs most often, but other executive positions also employ LTIPs frequently. Variance in LTIP participation is likely due to an increasing number of survey participants from 2010 to 2015. The average company size during that time ranged from \$1 billion to \$1.5 billion. At this revenue level, many companies have installed LTIPs, but there is no reason that smaller companies cannot employ the LTIP strategy as well.



Source: FMI Compensation

Understanding Your Eligibility Guidelines

Because non-qualified plans are subject to creditors in a bankruptcy, companies must follow eligibility guidelines to ensure that the participants have insights to possible risks, given their position within the organization.

While these criteria are not comprehensive, they are generally recognized as basic eligibility guidelines:

- Officers of the company or anyone with significant management of the organization
- Professional employees who earn more than \$100,000 annually
- Case precedent suggests no more than 15% of total employee population in the LTIP (includes hourly and union employees in the total headcount).

Including individuals outside of these criteria may subject the plan to change from non-qualified to qualified.

Vesting: What It's All About

Another characteristic of LTIPs is a vesting schedule, which outlines when a company conveys ownership of the LTIP award. For example, a plan participant earns an award at the end of 2016 but doesn't own the award until the end of 2020. Keep in mind that the vesting period does not necessarily equate to the payout period and that non-qualified plans define when employees receive payment. This could be at a specified retirement age, a point system of age and service, or a separation event like disability or termination of employment.

Exhibit 2 shows an example of a four-year "cliff-vesting" scenario in which awards vest at the end of the four-year period (thus the "cliff" terminology). If the awards were to vest 25% a year or some other combination over four years, this would be considered graduated vesting. Notice in the illustration how the awards stack on each other. As a result, by the fourth year in the program, the first award has vested but there are three more awards acting as "hooks" into the participant in the form of unvested awards. These unvested awards accumulate to create "golden handcuffs" and make it difficult for competitors to buy out. Imagine an executive receiving \$50,000 per year in the program. It would not take long for the accrued funds to be significant.

	Vesting Schedule (End of Year)								
Award Year	Total Award Amount	1	2	3	4	5	6	7	8
1	\$50,000	0%	0%	0%	100%				
2	\$50,000		0%	0%	0%	100%			
3	\$50,000			0%	0%	0%	100%		
4	\$50,000				0%	0%	0%	100%	
5	\$50,000					0%	0%	0%	100%
Total Vested Amount		\$0	\$0	\$0	\$50k	\$50k	\$50k	\$50k	\$50k



Source: FMI Compensation

LTIP Plans Come in Different Shapes and Sizes

There are many different types of LTIP plans. Since most E&C companies are privately held, the following plan types are most common in the industry:

Cash

This is the simplest program to administer and understand. A participant earns a cash award and then receives a cash payout at some point in the future.

- **Pro:** Cash is the simplest concept and is typically related to performance.
- Con: Inflation and time value of money erode cash value over time. Companies may compensate by paying interest on unpaid funds or allowing participants to use deferred compensation accounts where they can invest the cash similar to 401(k) style investments.

Restricted Stock

This type of stock does not require performance contingencies. The company simply allocates real stock after a designated time period has passed.

- Pro: Stock equity transfers actual ownership to participants.
- **Con:** Restricted stock is also called a "pay-for-pulse" plan because it only requires participants to be breathing. There is no performance element.

Performance Shares

Participants receive performance-based shares. Awards could range from zero to above target allocation, depending on performance of a predesignated measure.

- Pro: Stock equity allocation correlates to performance and achievement of goals that are tied to the business strategy.
- **Con:** There is a risk that the award is below target or zero. A below-target allocation could reduce the retention value of the award over time.

Phantom Stock

Phantom stock is not real stock. Its price can link to the actual share price, and the company can pay discretionary dividends on the shares, but phantom shares are not voting shares.

- Pro: Phantom stock is effective in family situations where the family has no intention of broadening ownership beyond the family but needs a means of retaining a professional management team. Another pro is that the value of phantom shares can increase over time (e.g., from \$50 per share to \$70 per share over four years).
- **Con:** This LTIP vehicle is the most complex option. There is also the risk that the share price could drop over time (e.g., from \$50 per share to \$30 per share over four years).

Stock Appreciation Rights (SARs)

Stock appreciation rights (SARs) are similar to phantom stock. The main difference is that the share value is only based on the stock appreciation. If the stock price depreciates, the value drops to zero.

- Pro: The management team is motivated to increase the share price over time. The company has no downside risk for payouts if share value drops below the award price.
- **Con:** Shares are worthless if they drop in value. There is risk that the program loses retention value when shares fall below the award price.

Exhibit 3 shows the prevalence of different plan types from 2010 to 2015, based on "FMI's 2015 Executive Compensation Survey."



Five Steps to Get Started With an LTIP

There are useful guidelines to follow when implementing an LTIP, including:

- 1. Pay for performance: There should be a performance measure and a goal in every LTIP. The performance measure should be tied to the business strategy. Most LTIP measures are tied to the balance sheet whereas short-term measures are usually derived from the income statement.
- 2. Do not duplicate the short-term plan: The long-term plan should not be a mirror image of the short-term plan. If the short-term plan performance measure at the company level is net profit before tax, perhaps the long-term measure is Return on Equity (ROE), Book Value or Return on Assets (ROA). Sometimes return-type financial measures require profitability hurdles to balance unintended consequences, but the plans should be distinct from one another.

- **3. Develop a fail-safe:** Financially responsible planning requires that both the shortand long-term plans contain a fail-safe. This is the minimum level of profit required at the company level in order to fund all incentive plans, including the LTIP.
- **4. Allocate an award opportunity:** A design error requires participants to use most or all of their short-term bonuses to "fund" or buy into the long-term program. This may work in real equity plans where ROE is high. If the ROE is low, forcing participants to buy the company's low-return stock or synthetic stock with their own cash is forced servitude. Create a budget and allocate an award by job level for the LTIP.
- **5.** Do not confuse award horizon with payout horizon: Design the plan to include an annual performance measure and then allocate an award. The award will be designated after 12 months but will pay out in the future, according to the plan design. Companies that create performance measures that are assessed after several years may find that the measure was missed so severely in the beginning of the performance period that participants give up trying to attain the target, and the program loses retention effectiveness.

The Accounting Perspective

One of the advantages of LTIPs is that the company does not actually fund the plan until payout. From a book accounting perspective, the company accrues an expense over the vesting period and assumes a liability on its balance sheet. At payout, the company receives a deduction for the accrued expense, and the liability is removed from the books. There obviously needs to be enough operating income in future years to pay for the impending liability. But if the vesting and awards are staggered, all payments will not be due at the same time.

When participants finally have access to their awards, the event is called constructive receipt. They are in control of the funds, and, therefore, it is a taxable event at ordinary income rates. Unfortunately, deferred stock price appreciation (including phantom stock price appreciation) is still taxed at ordinary income rates and not at capital gains rates.

A Look to the Future

Large E&C companies have been using LTIPs for years, but companies of any size can employ these strategies to retain key employees or to facilitate ownership transfer or management succession. With the talent war growing increasingly intense in the engineering and construction industries, and with millennials bringing their own career expectations and capabilities to the workforce, LTIPs can help firms create a compensation package that protects their investments in top talent and leaders. Rather than standing by while a competitor sweeps up your best employees, why not fold LTIPs under your compensation umbrella and let team members pick a long-term investment solution that best meets their needs and those of your company?



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How Autonomous Vehicles Will Change the Future of Road Design and Construction



By Jay Bowman

s automakers scramble to make cars that need little or no human intervention, it's time to consider four key implications of this trend for the engineering and construction industry

Auto manufacturers have been spending more time in the lab lately, experimenting with new technologies and concepts with one common goal: to be first to market with a fully autonomous vehicle. According to various media reports, Ford recently threw down the gauntlet when CEO Mark Fields announced that the company is working toward launching a fleet of commercial, level 4 (one level below a completely autonomous system, in which drivers don't have to be engaged) vehicles in a ride-hail service by 2021. To get there, Ford is investing in Velodyne, a self-driving tech company and working with three other startups.

There's no question that the transition to autonomous vehicles is already underway. Features such as adaptive cruise control, lane keeping and collision avoidance systems exist in many vehicles being sold today. Although vehicles with these features do not operate independently of humans, the transition to fully autonomous vehicles could occur within as little as 15 to 20 years. The disruption this will have on highway and street infrastructure is almost unimaginable. While neither good nor bad, this development represents the many facets of change that can benefit and some (if not most) that may suffer.

The purpose of this article is not to make definitive statements about the future but rather to hypothesize reasonable outcomes, outline four key areas of impact and show the implications of these trends on the design and construction industry of the future.

Breaking Down the Barriers

Self-driving cars are expected to ease our commutes, make driving as a whole much safer and make life more efficient. Seniors who are unable to drive safely in traditional vehicles, for example, will be more mobile thanks to their autonomous vehicles. In

terms of infrastructure, everything from streets to curbs to sidewalks will need to change when the autonomous car makes its official debut. And while an exact date may not be in clear view yet, the day is definitely coming.

For the construction industry, the transition to fully autonomous vehicles represents the single greatest disruption to current highway and street design and construction for the next 25 to 30 years. Although difficult to imagine for many and rejected in full by others, the pursuit of fully autonomous vehicles is evident by the large-scale investment made to date. This includes billions of dollars spent by automobile manufacturers such as GM, Mercedes and Nissan as well as firms perhaps until recently not associated with autonomous vehicles or transportation in general, such as Google.

There are many misguided allegations surrounding fully autonomous vehicle transportation and whether the world will reach this point by midcentury. Most of these allegations are false. Consider, for example, that the millennial generation (those people currently between the ages of 19 and 35) does not view vehicles in the same manner as older generations nor does it place extraordinary value in them. A recent Zipcar survey, for example, indicated that "millennials would rather give up driving than give up their smartphones or laptops."

But driving preferences alone may not matter in the transition to fully autonomous vehicles. At a recent GPU Technology Conference, Tesla co-founder and CEO Elon Musk hypothesized that human-driven cars may be illegal in the future. Speaking with NVID-IA CEO Jen-Hsun Huang, Musk said, "People may outlaw driving cars because it's too dangerous."¹ Musk was not endorsing such prohibition but rather conjecturing a reasonable expectation of results that many anticipate with the advent of fully autonomous vehicles.

Following are four more implications that the engineering and construction industry must be aware of:

1. Funding shifts. As we move toward a world where cars operate independently of humans, construction funding becomes another key consideration for the companies adapting our highways, roads and streets for the change. Funding for highway and street infrastructure investments is expected to shift from motor fuel taxes to a toll-type basis and perhaps result in a major increase in available monies. A U.S. Department of Treasury Department report estimated 1.9 billion gallons of gasoline are wasted per year due to traffic congestion.² Assuming an average \$0.485 per gallon tax for gasoline, this represents \$921.5 million in federal, state and local revenue.

Various industry stakeholders suggest not only that autonomous vehicles could eliminate most if not all traffic congestion, but also that anticipated efficiency gains could further reduce motor fuel consumption by 20% (a conservative estimate among the ranges that currently exist). Applying this estimate to the U.S. Energy Information Agency's reported 137 billion gallons of gasoline consumed in 2014 results in 27.2 billion fewer gallons consumed and slightly more than \$13 billion in motor fuel taxes lost.

¹ Musk, E. (2015, March 17). GPU Technology Conference 2015. (J.-H. Huang, Interviewer)

 $^{^{\}rm 2}\,$ (2012). A New Economic Analysis of Infrastructure Investment. Washington, D.C.: Department of Treasury.

One can assume that voters will reject the required increase in federal, state and local motor fuel taxes to merely replace this potential loss in revenue (and such tax increases would likely be unpalatable to the politicians who would have to legislate them). With the introduction of electronic toll collection (ETC) technologies and the inherent "connectedness" of autonomous vehicles, the ability to toll becomes applicable to essentially any highway and street in the nation. The deployment of new "remote" ETC could be as simple as activating a software program, as little hardware (e.g., automated gate, vehicle detector) is required.

Regardless of how fuel-efficient future vehicles become—by design or operation— tax revenues for highway infrastructure investment will be unaffected. Combined with low operational cost, the ease by which remote ETC may be deployed will also facilitate much greater opportunities for public private partnerships (P3), perhaps unleashing another major injection of funding for highway and street infrastructure investment on the level (or even greater than) witnessed with TEA-21.

2. Enhanced efficiency and accuracy. The enhanced accuracy and efficiency of autonomous vehicles will have a profound effect on highway and street design and construction as well as any ancillary and related infrastructure. The American Association of State Highway and Transportation Officials (AASH-TO) and the Federal Highway Administration (FHWA) have established lane widths for various types of roadways. For example, these range from 12 feet for freeways to 9 feet for two-lane rural highways. Lane widths are designed according to speed and roadway capacity, which in turn assumes human operation of vehicles and reaction times (e.g., acceleration, deceleration).

Typical roadway capacity is currently about 2,200 vehicles per hour per lane. The Center for Urban Transportation Research (CUTR) states that "this reflects only 5 percent utilization of roadway space."³ The transition to autonomous vehicles assumes a concurrent reduction in lane width (a 25% reduction in freeway lane width if assuming 12 feet to 9 feet) and an increase in roadway capacity (more than 50% by several industry estimates). This significantly limits the volume of additional highway infrastructure required, including widening and new alignment.

As a result, consumption of construction materials (e.g., asphalt, concrete) could decline by a third or more. Moreover, ancillary highway infrastructure such as lighting, railing, signage, striping and so forth could be largely eliminated. The same is true for other types of related infrastructure. For example, are parking lots and garages necessary in a fully autonomous vehicle society if people no longer own personal vehicles?

3. The potential for disruptive impacts. Autonomous vehicles will have many other disruptive effects on transportation, both evident and unforeseen. And while all of the disruptive effects may be unknown at this time and even unimaginable, certain issues are sure to arise. For example, public rail transit systems (e.g., light rail) will no longer be viable in second-tier metropolitan markets. It is reported that only 5% of employees in the U.S. currently utilize public transit to commute to work (2012 estimate).

³ Pinjari, Ph.D., A. R., Augustin, B., & Menon, N. (2013). Highway Capacity Impacts of Autonomous Vehicles: An Assessment. Center for Urban Transportation Research, University of South Florida.

Moreover, this is down from the almost 9% of employees who did the same in 1970. Although it is believed that established public rail transit systems, such as the subway system in New York City, will not be impacted by autonomous vehicles to any great extent, those in second-tier cities (existing or planned) will be abandoned. In contrast, high-speed rail will become viable as autonomous vehicles solve the "last mile" problem.

Improving the existing highway and street infrastructure, as well as upgrading it to include intelligent transportation features, will shape and influence design and construction activity for decades. It is important to note that the reduction in some types of highway and street construction does not necessarily translate to an overall reduction in the level of highway and street infrastructure investment.

Instead, limited funds may be directed toward much needed improvement of existing assets. This may be welcomed by state and local administrators and agencies, as indicated by a recent survey commissioned by the American Society of Civil Engineers (ASCE) with the Governing Institute. The survey reports that the needs of these administrators and agencies are primarily focused on "significant upgrades/replacements" and "general maintenance," as only 8% of respondents identified new infrastructure as their most pressing issue.⁴

Furthermore, the embedding of technologies into the highway and street infrastructure could usher in a period of rapid "upgrades." As previously noted, the volume of available monies for highway and street construction could also accelerate quickly with the transformation to autonomous vehicles due to new funding models (e.g., remote ETC) and sources (e.g., P3).

4. Greater need for third-party planners. State and local highway and street administrators and agencies will require greater third-party involvement with development activities as a result of the evolution to autonomous vehicles. Few state and local highway and street administrators and agencies have actively studied the impact of autonomous vehicles in their planning practices to date.

This is not an indictment of these organizations but rather recognition of the conflicting conditions within which they are operating. Consider that state transportation employment has decreased by more than 10% over the past decade while highway and street construction projects have simultaneously increased in value and compressed in schedule.

The rate of technological innovation, which itself is accelerating, further complicates issues for these state and local highway and street administrators and agencies. Therefore, it is believed that third-party providers of planning, technology consulting, design-build and other nontraditional services will be of greatest importance to owners of transportation infrastructure. The inability to provide these services (or some combination thereof) will then present competitive disadvantages to many design and construction services firms operating from a historical perspective.

⁴ Vock, D. C. (2014, October 1). The Long-term Cost of Building Transportation Projects on the Cheap. Governing.

It's Time to Make a Move

The bottom line is that just 15 to 20 years from now, highway and street design and construction will look very different than they do today. The changes will include not only new designs and construction but also the manner in which funding is secured for transportation, the level of services expected from third-party providers, and exactly how those services will be delivered. The changes will create new opportunities and eliminate others. Now is the time to consider the range of possibilities such a future presents to you and your organization, develop possible responses and enjoy the ride.



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Eight Characteristics of Agile Leaders



By Emily Livorsi and Kyla Holcombe

The race to cultivate and transition leaders into executive positions is on. Is your company ready for the challenge?

With 10,000 baby boomers retiring every day, the construction industry is in a race to fill vacant leadership seats with candidates who are as competent as they are agile. Defined as the power to move quickly and nimbly while thinking on your feet and acting decisively, agility helps leaders tackle the challenges of today's business environment while also thinking about the bigger picture and planning for the future.

The question that many industry leaders in construction face right now is, how do we take the next generation of leaders and help them quickly and effectively expand their enterprise-thinking skills. And, even more importantly, how can senior leaders help transform millennial employees—who currently comprise 20% of the nation's management roles—into leaders who can make intuitive business decisions?

The latter is becoming a particularly pressing issue as the nation's baby boomers make their way into retirement. In many cases, organizations are taking an age-old approach to the problem by focusing on skills-based training, creating development plans and increasing leaders' business knowledge and skills as quickly as possible. While necessary, these activities are all near term in nature and the question remains: Will the skills we know are important today be enough to help young leaders respond to tomorrow's changes?

In an increasingly complex and volatile industry, tomorrow's leaders will need more than business acumen to lead effectively. Leaders need agility. In this article, we describe how leadership agility is closely aligned with what it takes to be a Peak Leader—a concept FMI has researched for more than a decade in the engineering and construction industry. We also provide recommendations for fostering agility in your people, a task that, if not already on your to-do list, should be marked as an urgent priority starting today.

What Is an Agile Leader?

We're all operating in a VUCA world where volatility, uncertainty, complexity and ambiguity reign. Because there are no assurances in this environment, garnering both personal and organizational success requires an agile mindset. At a leadership level, agility is a mindset that facilitates rapid growth and the adoption of key business strategies. Agility helps leaders differentiate themselves on three key levels:

- 1. Being able and willing to adapt to change
- 2. Remaining resilient in times of change and uncertainty
- 3. Learning from their experiences, including failures

Think about your company's leadership ranks. The agile leaders respond quickly to industry changes and lead the charge to seize opportunities. They inspire others to spot and seize future opportunities and drive the team to be operationally nimble. They also create a culture of adaptation where everyone is expected to respond to a changing environment with speed and flexibility.

Now consider the leaders in your firm who might lack agility. They probably become lost and consumed by volatility, uncertainty, complexity or ambiguity. Given their old thinking paradigms, these rigid leaders struggle to cope and are resistant to change, placing their companies at risk of stagnation and extinction.

Agile Leaders=Strong Organizations

In a time when baby boomers are retiring en masse and millennials are, for the most part, unprepared to fill their shoes, FMI has created the Peak Leader Model (Exhibit 1) to help companies develop agile leaders. Based on extensive observation, research and practice around leadership, we've determined that Peak Leaders—those who exemplify what it means to be a leader—exhibit eight key behaviors. You can use this framework to identify, support and develop agility in your own leaders.



Data source: Model is based on in-depth industry research.

1. Agile leaders set direction. Never afraid to stand up and take charge, agile leaders have a clear sense of direction and communicate it with ease. They understand how organizations, teams and other constituents can respond to a changing industry. They see the big-picture vision and the path to getting there. Finally, agile leaders will continuously clarify the direction for others and empower people to achieve the organization's vision.

Suggestion: To hone your own direction-setting skills, you should start by identifying your worldview about leadership and then articulate how this world-view fits with the organization's strategies and priorities. In a tumultuous environment, zoom out and reflect on the big picture; remember to continuously communicate to those around you the big picture behind the change.

2. Agile leaders execute and follow through with calculated speed. When critical business opportunities or project challenges arise, agile leaders know how to balance quick decisions with careful planning and organizing in order to maximize results. They know how to communicate effectively to drive buy-in among key stakeholders as well as push accountability among team members. Because agility requires speed, clear communication is essential for the agile leader. Teams working with agile leaders understand their roles, know what results they are accountable for, and are empowered to get there.

Suggestion: Take a look at your team members. Do they clearly understand their roles? Have you clearly outlined what they are accountable for? Providing your team with clarity will speed up its ability to act nimbly in the face of uncertainty when approached with an opportunity or when it encounters a major obstacle. Remember, agile leaders inspire agility in others to achieve outstanding results.

3. They know how to effectively align resources. Tight budgets and a lack of resources aren't a problem for agile leaders. Rather than complaining or allowing these challenges to stop them, leaders who show agility can leverage those around them to address even the smallest items. They understand how everyone fits into the big picture and how team members will be integrated into an operational change or the adoption of a new game-changing strategy. They are inclusive and understand the power of utilizing resources effectively. They also spot hurdles on the horizon and know how to get those obstacles out of the way so that their people can move swiftly in the right direction.

Suggestion: Identify a person or team with whom you would like more interaction—someone you aren't currently collaborating with. Then, identify at least one opportunity to work with this person/team. Another good strategy is to reflect on a recent project or task, identify what additional resources could have improved outcomes and analyze what resources were non-essential to the success of the project or task (i.e., those resources that could have been utilized elsewhere).

4. Agile leaders inspire others to achieve seemingly impossible goals. The best leaders can effectively infuse their passion into others and help employees achieve their own goals. In some cases, agile leaders can even help others tackle achievements that seemed impossible at the outset. They also motivate others to be early adopters to new strategies or procedures, even when change seems difficult. Agile leaders move others from what they've always done to a new way of being, all while factoring in their team members' individual perspectives.

Suggestion: To help others achieve the impossible, think of someone specific who motivated you through a difficult time at work and then articulate how that person helped you tackle adversity. Important to remember: Everyone has different motivators. You can also ask one of your employees what motivates him or her and then brainstorm two specific ways to alter your leadership style in a way that is personally motivating to this employee.

5. They put the spotlight on others. Agile leaders possess strong emotional intelligence: They know how to focus on the needs and emotions of others and respond appropriately. So while agile leaders embrace change, they don't leave bodies in the wake of that change. Instead, they understand that change can trigger emotions like fear and uncertainty, and they provide their team members with positive energy and a sense of confidence. Agile leaders help others move from feeling fearful to accepting a challenge for change. This is an extremely important quality in today's VUCA world where change is both inevitable and unpredictable.

Suggestion: Put the spotlight on others by simply examining your personal conflict style and then identifying the strengths and weaknesses of this style. Reflect on a recent time when you experienced stress and then identify your immediate reaction (i.e., emotions, thoughts, actions), the impact of that reaction on others, and how the reaction changed over time. What could you do differently to help others in times of chaos?

6. Agile leaders know how to think strategically. In their quest to find answers and underlying truths, agile leaders know how to ask the tough questions, and they don't settle for surface responses. They focus on the horizon with the aim of spotting strategic opportunities that others haven't seen yet. They spot how an operational change might negatively impact another part of the business, for example, and then quickly address the issue. They know when to utilize intuition and gut instinct, but they also know when to dive deeper into the data to make the best possible decisions for their organizations.

Suggestion: When making a future decision (big or small), identify both your gut reaction and your logical reasoning; then determine how your intuition and logic are aligned and misaligned. At the beginning of next week, read something that is relevant to your business and priorities for the coming week. Consider a source that you do not usually use (e.g., newspaper, blog, LinkedIn article, book, podcast).

7. They understand the talent development process. Agile leaders have the humility and foresight to know that they can't tackle the organization's problems alone, so they inspire others to grow along with them. They spot individuals who are excited about learning and then they provide them with the opportunities for development. Agile leaders believe that leaders themselves are responsible for their own development and they should have access to achieve development.

Suggestion: Hone your questioning and listening skills and practice new strategies for connecting with your team and developing its potential. Identify two team members with underutilized potential and then schedule meetings with these team members to discuss how their strengths may be better utilized and stretched.

8. Agile leaders lead from within. Perhaps most importantly, agile leaders aren't afraid of challenges or failure. They view mistakes as learning opportunities. They are kind to themselves and balance a push for self-excellence with an understanding that fumbles are part of leadership development. They understand their own strengths and weaknesses and set clear goals for self-development. The agile leader values all types of learning and can spot applications to their roles, teams and organizations. Lastly, the agile leader is a role model; he or she is an example of adaptability and commitment to self-growth.

Suggestion: To lead from within, identify your personal strengths and growth areas (via self-reflection or by using leadership tools); then develop two specific goals related to your growth areas. Consider how you can use your strengths in untapped ways. Identify a time you recently failed or did not fully meet a goal; then brainstorm three ways you could deal with a similar situation differently in the future.

Fostering Agility In Your People

Some leaders are inherently more agile than others, but our research shows that this trait can be fostered and developed. The pivotal mistake many firms make is assuming that promotions, new assignments and ladder climbing provide their leaders the "experience" to be successful. However, time and technical training do not guarantee that your leaders will develop the skills they need to lead your business. Growth opportunities should be customized to specific leaders and should focus on the eight key traits outlined in this article to develop agility: the characteristic your leaders will need in the absence of time and through uncertainty. By pulling from those traits and FMI's Peak Leader framework, you can effectively nurture and develop agile leaders in any business environment.



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Using Fleet Technology to Reduce Accidents and Liabilities in Construction



By James Boileau, P.Eng. and Andy Peterson, Surich Services Corporation

When the construction industry growing at a healthy pace in recent years, many contractors face the challenge of managing heavily congested job sites crowded with company-owned fleets and subcontractor and supplier vehicles

As a result, truck and vehicle accidents both on and off job sites are on the rise and inexperienced workers and drivers are further exacerbating the problem.

Additionally, many of today's projects are in dense urban areas, where the volume of private vehicle and pedestrian traffic adjacent to job sites is higher than in a suburban or rural area. This puts the public at further risk of accident and injury.

The frequency of fleet accidents is on the rise, as are the medical bills, vehicle repairs and liability payouts resulting from injuries to people and property. With these rising costs, fleet managers are looking for ways to improve fleet safety and reduce expenses resulting from fleet accidents. With many vehicles on the road or on job sites each day, many contractors have a large fleet accident exposure that could be more effectively managed using technology.

Adopting New Technologies to Reduce Accidents

Technology is improving efficiency and safety for contractors in many areas, including fleet safety. In fact, the fleet management market is expected to grow from \$10.91 billion in 2013 to \$30.45 billion by 2018.¹ Fleet intelligence tools can help improve productivity and cost savings as well as enhance customer service.

For example, to better manage traffic flow on construction sites, Cemstone Products Company, a Minnesota-based supplier of premium concrete solutions, works closely

 $^{^1\} Markets and Markets, http://www.marketsandmarkets.com/Market-Reports/fleet-management-systems-market-1020.html$

with the general contractors during the pre-job planning stage. "To reduce congestion on the job site, we plan proper load delivery spacing," says Mike Brekken, safety director. "This load spacing creates less congestion on the job site and less stress for the drivers trying to maneuver the vehicle and concrete pour."

Cemstone recently installed a single monitor inside the 450 vehicles in its fleet, reducing the difficulty of reading multiple screens for drivers. Previously, Cemstone's drivers had to view critical information such as GPS, tire pressure, delivery messaging and more on separate screens. "Having one monitor in the vehicle for all functions made a major difference for the drivers in their ability to safely track their movements both to and from the job site while driving," Brekken explains.

Brekken also sees technologies such as rollover sensors in new trucks playing a critical role in helping Cemstone's drivers who face unique challenges when driving cement mixers (e.g., a high center of gravity or the different viscosities that come with each load). He adds, "Cemstone considers technology tools as a way to help reduce stress for our drivers and create less scrambling while at the job site. When our drivers have an overall clearer mindset, they are able to pay better attention, which leads to better safety."

The Power of Telematics in Improving Fleet Safety

Advancements in telematics technology are helping construction companies reduce fleet accidents on job sites. Many companies have adopted this technology to monitor vehicle location, performance and driver behavior. Telematics combines GPS technology and integrated telecommunications to provide a real-time snapshot by sending, receiving and storing information about each vehicle in a fleet, providing vehicle tracking and diagnostics.

"Telematics offers a powerful tool to see what is happening with a vehicle while on the road," says Steve McGill, corporate safety manager at Volkert, Inc., a full-service, multidiscipline engineering firm based in Alabama. More than 50% of the company's services are performing field operations, requiring its 560plus vehicles to be on the road constantly. The company's fleet logged more than 17 million miles in 2015 serving customers nationwide.

"Since almost 80% of our company's claims are au-

Potential benefits of telematics in a fleet safety program:

- Optimize vehicle route planning and deployment
- Improve driver behavior and safety on the road to help reduce the occurrence of vehicle crashes and reduce auto liability claims
- Enhance employee driving skills and knowledge
- Alleviate driver stress and fatigue through coaching and development

to-related, we knew that a more aggressive approach had to be taken to manage driver behavior," explains McGill. The company is now starting a one-year telematics test to collect the data necessary to best determine how to minimize accidents. Volkert will be analyzing many driving habits, including hard braking and quick accelerations, which the company believes could be contributing factors in accidents.

"Telematics is truly a surgical approach to helping us identify the precise problems in fleet safety," McGill explains. "As we receive the individual driver's telematics reports, Volkert will retrain our drivers in order to correct any unsafe driving behaviors which were identified."

Key Considerations When Implementing a Telematics Program

Advancements in telematics technology are helping construction companies reduce fleet accidents on job sites. Many companies have adopted this technology to monitor vehicle location, performance and driver behavior. Telematics combines GPS technology and integrated telecommunications to provide a real-time snapshot by sending, receiving and storing information about each vehicle in a fleet, providing vehicle tracking and diagnostics.

A key first step in implementing a telematics program is for a company to develop a clear objective of what it wants to accomplish. Is it to...

- Provide more efficient movement of materials, equipment or workers from job site to job site?
- Improve driver behavior?
- Track vehicle maintenance records?
- Manage Department of Transportation (DOT) driver logs?
- All of the above?

Once your objectives are determined, other considerations in implementing a telematics program include:

1. Select a system with the right fit

When choosing a system, in addition to evaluating the telematics capabilities, companies should consider how their employees will use the systems. There can be significant differences in the amount of time it takes to train staff and implement different types of technologies. Having the "best" system may be less important than having the system that fits your organizational needs.

2. Plan the pilot phase carefully

Companies should structure a pilot program to fully understand how the system works and then address any issues before implementing a telematics system for the entire vehicle fleet. Selecting which vehicles, employees and supervisors are involved and defining the communication process can make or break the success of the effort. It's often helpful to set clear and measurable goals and activities for both managers and employees involved in order to get their buy-in and feedback.

3. Carefully design supervisor and employee messaging

t's important to communicate that employees are not bad drivers, but that you want to help them to be better than average. A coaching approach from the supervisor (rather than a series of disciplinary actions) may help produce greater improvements across the organization. Be sure your managers are ready for those coaching roles.

4. Stage the full telematics rollout

After successful pilots, organizations will sometimes rush to incorporate telematics into the rest of the fleet. While enthusiasm is great, it's critical to take the same painstaking steps to communicate and support the implementation for the wider fleet. It is often helpful to take a staged implementation approach to ensure that each group of supervisors and drivers is comfortable with how the system works and understands its respective role in the initiative.

5. Put the data in focus

Telematics data can be overwhelming. Focusing on a few key areas can help drive behind-the-wheel improvements. For example, consider comparing hard or panic braking to the amount of time driven. Establish company averages and identify the outliers. Work with the drivers who are performing much worse than the average, but also factor in the overall group. Companies with an active coaching process can often significantly decrease the average rate of hard braking and the rate of overall vehicle crashes.

Heavy vehicle usage will always play an important role in the construction business—a hard fact that makes contractor auto exposures an ongoing, chronic risk that needs to be managed effectively. Using cutting-edge technologies such as in-vehicle telematics can help create an effective and efficient fleet safety program designed to protect your employees, drivers, the public and, ultimately, your bottom line.

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Organizational Agility: Creating Enduring Results by Overcoming the Cyclicality Trap



By Paige Kelly and Rusty Sherwood

ive critical factors driving agility in today's engineering and construc-tion organizations.

What is it about those firms that seem to defy the industry odds? Whether we're reading about them in ENR magazine or in the quarterly updates from FMI's Nonresidential Construction Index, there is always a short list of firms that perpetuate profitable growth in spite of cyclicality and appear to find and capitalize on the right opportunities faster than most.

These gravity-defying firms operate in the same industry as the rest of us, dealing with the same ebbs and flows of opportunity and challenge, but culturally and structurally they are very different. Their foundations are built on a challenging blend of adaptability and discipline, of flexibility and rigor, and of creativity and data-driven systems. In short, these companies are organizationally agile.

Defined by Lombardo and Eichinger, agility is, "The willingness and ability to learn from experience, and subsequently apply that learning to perform successfully under new or first-time conditions."¹ Agility lies at the heart of those organizations that outperform cyclicality, and they see the acceleration of disruptive change as an opportuni-

ty. Whether it's global markets, technological advances, evolving client expectations or newly minted competitors—agile organizations strategically respond with urgency and intentionality. Leaders inside these agile organizations understand that high responsiveness to change is a function of building an adaptive mindset across all members of the organization and putting the systems in place to drive transparency

Organizational Agility is the ability to respond to strategic shifts in internal and external environments, make collective commitments and deploy the necessary resources quickly to capitalize on new opportunities.

¹ Eichinger, R. W., Lombardo, M. M., & Capretta, C. C. (2010). "FYI for learning agility." Minneapolis: Lominger International: A Korn/Ferry Company.

and operational efficiencies. It's not enough to be open-minded and receptive to new ideas or to have operational discipline. Agile organizations must have both and are led by leaders who get the importance of maintaining balance between adaptability and discipline.

Agility and Living in the Tension

In a recent study,² the authors found that the combination of speed to actionable decisions and structural stability determines an organization's aptitude towards agility. These two factors seem diametrically in opposition but work together to keep a company from becoming too rigid or erratic. The speed of decisions allows the company to adjust to a constantly changing landscape. In addition, an appropriate level of structural stability helps the firm focus on executing results in the short term while meeting longer-term goals. If you expense rigor, creating efficiencies of process and analysis becomes impossible. And, with too much rigor, a point of decision paralysis takes over. Those companies that can walk the tightrope between flexibility and process reap the benefits of agility, capturing opportunities that other companies only see in hindsight.

In the construction industry, we have seen this tension unfold as companies grow from smaller, entrepreneurial outfits into larger, complex systems. For example, one general contractor in the Northwest was vehemently opposed to implementing new procedures as it evolved into a larger organization. The idea of implementing processes and procedures felt bureaucratic and stifling to the firm's ability to adjust course quickly in response to external market dynamics. As a result, proposals, project management and closeout were significantly more difficult for this firm; capturing lessons learned and adjusting within the company's existing markets were nonexistent. The speed of progress the firm experienced as a small company—when fewer individuals were making decisions—slowed significantly due to a lack of clarity in process, goals and values used to align individuals. Consequently, the organizational stability was below average, which ultimately also prevented the organization from adapting quickly.

Five Factors of an Agile Organization

Through our industry research we have found that highly agile companies within the engineering and construction industry have a combination of five critical factors that provide structure to timely decisions. Given the variety of clients, projects, markets and industry sectors we work in, organizational agility can take various forms. Specifically, the five critical factors contributing to a company's overall agility are:

It begins with agile leaders. The practice of agility starts at the top, with executives who drive innovation throughout the organization. Company vision, direction and key decisions are frequently and consistently communicated to all levels of the company. The ability to take risks is encouraged and rewarded within the existing systems. Agile leaders look for opportunities to capitalize on external ideas, but also embolden employees to bring ideas to the forefront of the organization. They also inspire and empower their organizations to approach challenges differently based on lessons learned, new available information, nimble operations and flexibility to respond to changes. Often, company leaders promote agility by spearheading systems, practices and processes that drive the pursuit of new markets and new ways of doing things but with efficiency and rigor. Cultural agility starts with the leader.

As one industry stakeholder stated, "The fact is you have to keep moving. Oth-

² Bazigos, M., De Smet, A., & Gagnon, C. (2015). "Why Agility Pays." Retrieved from http://www.mckinsey.com/business-functions/organization/our-insights/why-agility-pays.

erwise you can get paralyzed if you want to create too much certainty around you. And this also drives the ability to evolve and adapt and be agile."

They have a company vision that requires agility and adaptive norms. If vision is the foundational driver of why a company exists, how it operates and ultimately defines where it's going, agile organizations have a vision that infers the necessity of adaptability and disciplined execution. The company culture that supports this kind of vision embraces all those operational pieces that foster innovation, speed, resiliency, peak team collaboration and efficiency. What is rewarded, compensated, measured and recognized aligns with empowering individuals and teams to move and adjust quickly. You find delegation and empowerment embedded in the organizational DNA. Agility as a cultural norm means that individuals have the ability to fail fast and make adjustments without giving away the business. A specialty contractor in Southern California, for example, utilized this environment to create a highly adaptive prefabrication facility with pre-fab shop leaders empowered to flex shop configuration as needed.

As one industry executive added, "So you're dealing with corporate culture, aptitude, an interest to evolve your business and to deliver your business plan for the current year. These things are always in tension. But one of the best ways of resolving the tension is to have it on the table and debate it and create an arena and a room and the license to challenge and discuss."

The culture drives fanatic attention to process and systems. Organizations can avoid making erratic decisions by creating clear structures, establishing boundaries and providing long-term stability. For example, if role clarity exists for empowering individuals (e.g., Who should make decisions when problems escalate? How does each individual contribute to the team? etc.), the existing systems should accelerate decision-making versus slowing it down.

Specific organizational design elements include, but are not limited to, clearly identified roles and expectations, organizationally ingrained values that are communicated and lived, practices to encourage high-performing teams, objective-based meetings, cross-functional collaboration and continuous improvement protocols. Implementing these systems and processes can result in highly viable roles and responsibilities that are rigorous in nature but also flexible. Internal processes are in place to vet ideas, measure them and move forward rapidly. A company may create funding for people to pursue agility and allow the process to prove itself. Test markets are essential.

They pursue talent diversity actively. Within agile organizations, diversity of skills and abilities encourages a village of thought that brings wide-ranging perspectives on where to play and how to win. Organizational agility encourages healthy internal competition through challenging individuals to innovate and solve problems differently. Companies with process-driven hiring practices, for example, focus efforts on recruiting individuals who espouse the organizational values as well as the competencies that the firm deems critical to its culture. Although it might vary depending on the company, individuals that have high levels of curiosity and tenacity and are highly coachable would make compatible candidates for an environment that encourages quick learning and response. Combining the rigor of hiring processes focused on key competencies and innovative ways to recruit talent increases an organization's ability to sustain agility.

It's important to note that leaders of high-performing, agile companies tend to be zealots of ongoing performance improvement and continuous feedback. Because responsiveness is key in making quick decisions, the yearly performance review is vastly insufficient to meet these needs. Frequent feedback for individuals provides in-the-moment opportunities to grow and develop thinking. The most agile organizations are closely focused on providing nearly continuous feedback and learning opportunities for their people. This is particularly important for younger employees: In FMI's recent <u>millennial study</u>, almost 50% of the millennial survey participants responded that they wanted feedback on a monthly basis. This is a key indicator of how this young generation is driving change in performance management and organizational behavior.

Vision without flawless execution is delusional. One of the factors that sets an agile organization apart is its ability to act and respond to changing conditions. Planning and execution occur in nearly every company in the industry, but operational discipline truly differentiates agile organizations from the rigid ones. This is the ability to create operating practices, ingrain them in the culture and build in opportunities to adjust as needed. For a specialty contractor in the Northwest, its ability to build a network of trusted, like-minded subcontractor partners allows it to quickly mobilize and execute on new projects at any given time.

Finally, corporate agility practices include everything from lean ideology³ to scrum masters and leaders,⁴ to increased sensitivities and decisions when responding to market trends and thinking strategically. The litmus test for what an organization should adjust to lies in how it is guided by company values and processes that allow for decision-making by employees at all levels.

Lean Process: continual elimination of waste Scrum: management and control processes for completing complex projects and scopes of work Strategic Thinking: process in which individuals think about, assess, view and create the future for themselves and others

How to Increase Organizational Agility

Incorporating agile practices while combining speed and stability requires "whole-brain" strategic thinking leadership who cultivate mental flexibility and systems thinking at all levels. These leaders actively recognize the results of top performers but continuously point out the correlation between exceptional outcomes and the ability to adapt and deliver. In short, an agile culture is created and reinforced daily by leaders mindful of its impact on performance, including highly engaged talent, greater employee empowerment and accountability, increased customer and employee satisfaction, better operational efficiency and faster time to market.

The idea of organizational agility is very enticing but not for the thin-skinned or those looking for a quick fix. It takes deep conviction, strong initiative and unwavering tenacity to first envision its impact and then translate and reinforce the behaviors required throughout the organization.

³ Rigby, D.K., Sutherland, J. and Takeuchi, H. (2016). "The big idea: embracing agile." Harvard Business Review.

⁴ https://www.scrumalliance.org/why-scrum

To begin the process of building an agile organization, leaders need to establish a clear vision and direction for the business that underscore the need for openness to new ideas and fanatical attention to efficient systems and processes. Because what matters gets measured, these leaders identify three to four performance metrics that measure agile performance. Next, they empower individuals through effective delegation, reduce organizational layers that slow down decision-making, and manage outcomes with clear expectations while empowering others to design the means to achieve those outcomes.



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