

**2018-2019
EXECUTIVE
COMMITTEE**

**ADDRESSES
THE
CHALLENGE
OF NEW
TECHN**



ES

BL-ACC/JAC/3/DGETTYIMAGES

BY STACY COLLETT

TECHNOLOGY

The future for the engineering industry looks brighter than it has in years.

Capital spending in the United States is at an all-time high. The state of New York, for example, which invested \$48 billion on capital projects last year, is expected to spend an additional \$50 billion this year, according to New York-based Executive Committee members.

The Trump administration still has plans to invest trillions in the nation's infrastructure, though the initiative is stagnant for the time being. New hires who joined engineering firms after 2011 have little recollection of the recession's crippling effect on the industry and have primarily experienced only growth and prosperity at their firms.

Members of the 2018-2019 ACEC Executive Committee offer their views on technology and trends that are expected to impact the industry.

"We are living in a great time in our industry where markets are expanding," says ACEC Chairman **Manish Kothari**, president and CEO of Sheladia Associates, Rockville, Maryland. "There is also unprecedented opportunity for innovation and the use of new technology."



Manish Kothari

FOLLOW THE MONEY

With no clear commitment on long-term federal funds for public sector projects, Chair-elect **Mitchel Simpler** sees firms migrating more and more from public sector work into the private sector. “The private sector is where the money is,” says Simpler.

“In New York, \$2 out of every \$3 spent in construction is in the private sector,” says Simpler, a managing partner at Jaros, Baum & Bolles, New York City. The private sector offers not only new opportunities for firms that traditionally rely on public sector projects, but it also drives them to become more innovative and creative. “Overall, diversification is going to help the industry tremendously,” he says.

Kothari says that “we are also going into international markets for infrastructure work.”

He adds that the government sector does have bright spots. “An increase in military spending will offer opportunities in the defense sector,” he says.

TECHNOLOGY TRENDS

Executive Committee members say innovation is critical to advancing the industry.

“As we are providing services, we are not just blindly doing the same thing over and over again,” says **W. Arthur Barrett**, ACEC vice chair and senior vice president at Gannett Fleming, Baltimore. “Putting innovation into our projects makes sure we are keeping up with technology, and that we are embracing technology such as artificial intelligence (AI).”

Vice Chair **Jerry (Jay) Wolverton, Jr.** points to the increased speed of engineering projects. “It is so much faster, and the expectation from clients is there for it to be fast,” says Wolverton, president and CEO of Wolverton & Associates, Duluth, Georgia. “I have colleagues who are fearful the profession of engineering may go away because of technology. But firms that embrace technology are going to thrive.”

“What would have previously taken 10 hours now takes an hour to generate that same work product,” says **Michael “Sully” Sullivan**, executive director of ACEC/Georgia and NAECE president on ExCom.

It’s not just client expectations that are being upended.

Mitchel Simpler



The convergence of groundbreaking industry technology will change both the way engineering work is done and the products generated.

“We are going from 2D drawings to 3D BIM models that someone can put on a virtual reality headset and walk through their building or piece of infrastructure that is being designed,” Sullivan says. “That is



W. Arthur Barrett

going to radically change the way engineering work is done and what clients are going to expect.”

Technology also brings opportunities for firms to transition from billing time into selling value, says Vice Chair **Gayle Roberts**, former chair at Stanley Consultants, Centennial, Colorado. “We need to work

toward selling our value and getting away from selling hours. Consider developing technologies and software suites, leveraging analytics using sensors and project data together with our engineering know-how to offer new services,” she says. “Partnering with companies beyond our traditional thinking such as Google and others could lead us to new areas. We are moving toward technology solution providers rather than engineering design companies.”

In the meantime, firms have to be careful about who is building the design software they incorporate on projects. “The people developing design software are not usually traditional design engineers, but software programmers,” says

Vice Chair **Stephanie Hachem**, senior vice president at Kimley-Horn and Associates, Raleigh, North Carolina. “Design decision making is shifting more to the programmer and away from the design. But if we are not proactive, we are going to find ourselves reacting to someone else’s programming. We need to step in and



Jerry (Jay) Wolverton, Jr.

Michael “Sully” Sullivan



have an active role in the development of design programs, their use and implementation.”

Some deceptively simple new technology could also pose a threat to the industry, Sullivan adds. “An untrained, unqualified person could try to leverage these new technologies to deliver an engineering product.

How do we protect against unqualified companies or individuals using these tools without the expertise or the knowledge?” he says.

It’s not enough to rely on others for expertise. For example, AI, which garners both excitement and concern in the industry, has the potential to revolutionize project design. If firms outsource all of their AI know-how, they could lose their competitive edge and their market share. It comes down to integration and utilization.

“Where are we going to be when AI can design a bridge better than we can?” says Barrett. Engineers will have to learn what a community wants and use AI to design a product that addresses those wants and needs while at the same time maximizing the savings that AI will bring to a project, Barrett says.

INFRASTRUCTURE NEEDS

In some areas, it’s not the latest technology but the everyday needs that face the biggest hurdles. U.S. infrastructure remains in dire straits, with about \$150 billion annually needed to repair highways and bridges, \$100 billion for airports, \$25 billion for public transit and \$25 billion for water and wastewater, according to Kothari.

Vice Chair **Keith Jackson** believes water will be a particular area of opportunity, both in the need to repair infrastructure related to water and wastewater, but also getting water to where it is needed.

“In Texas, for instance, we have lots of water. It is just in the wrong part of the state, and others do not want to share it,”



Gayle Roberts

Stephanie Hachem



says Jackson, who is also a senior vice president at HNTB Corp., Austin, Texas. “You also have Flint, Michigan, and their water problems. Puerto Rico is suffering still without water, and California just signed an \$11-billion plan for a new pipeline system to get water to Los Angeles.”

In California and other parts of the West, Vice Chair **Keith London**, president and CEO of Kennedy/Jenks Consultants, Murrieta, California, also sees parched communities working on ways to treat all types of water as one water resource. “Planned potable reuse projects, where wastewater undergoes advance purification before being reintroduced to the environment to indirectly supplement drinking water supplies, are being explored in parts of the U.S. where water is scarce,” says London.

“We are currently leading the planning, design and implementation of what will be the next wave of indirect potable reuse projects in California; supplementing groundwater and surface water supplies to meet increasingly stringent discharge compliance requirements, or to offset expensive imported water supplies,” he says. “This is an exciting time, where the regulations, public acceptance and technology are all aligning to allow cities and water agencies to develop local, sustainable supplies.”

But funding remains a thorny issue, with the federal government proposing that more money come from states and private partnerships. “There have been states passing infrastructure bonds, which is a good thing, but as far as federal funds, unless they really have a new revenue source it is going to be very difficult to fund any added increases,” says Vice Chair **Charles Gozdziwski**, executive chairman at Hardesty & Hanover, New York City.

Despite the Trump administration’s talk of infrastructure funding, there is still no clear funding source for these projects. “However, it does feel like the pulse is stronger than it has been in a long time for infrastructure funding,” Hachem says. “The focus is shifting a bit from just a case for helping move goods and people to an issue of economic health, especially when giant online retailers increasingly look to infrastructure to build massive distribution centers and need healthy roads and bridges to deliver goods to customers.”

DOSE OF REALITY

There is no shortage of other threats to the industry, according to Kothari. Fear of over-regulation, looming trade wars, the perpetual shortage of qualified engineers and China’s plan to invest \$4 trillion in global infrastructure are just a few of the “what ifs” that keep some engineering firm leaders up at night. And that doesn’t include the major impact that a sudden economic downturn



Keith London

could have on the industry despite its current strength.

Relative to the current strong economic conditions, “we know it does not last forever,” London says. “You have to be prepared for the fact that one day, the national economy is going to start to slow down, and we are going to have to adapt. In fact, adaptation will be key for our industry going forward.”

Despite all of the new projects, firm growth and expansion in the industry today, those who endured the recession cannot forget what it felt like when the bottom dropped out.

“Although the economy is robust at this time, we have the highest levels of debt ever in the country—both from the political and private side. We do not know how that is going to play into it,”



Keith Jackson

Gozdziewski says. “It is cyclical. We just have to be ready for something bad when it happens.”

But what does that readiness look like? What business strategies should firms implement to capitalize on the good times and prepare for an industry shift or downturn?

“ACEC has been at the table for more than 100 years protecting our industry and advancing its interests in all kinds of conditions,” says outgoing President and CEO Dave Raymond. “Today in many fundamental respects we are operating no differently than the past—in that we seek infrastructure funding, regulatory and procurement reforms and tax relief. But these concerns are played out against changing politics, technologies and market trends. The better we understand these trends, the better we will advance our interests.”

“You have got to be a player, and you cannot sit on the sidelines,” Wolverson says. “ACEC gives us the opportunity to get in there and shape the vision of our industry by being the person sitting at the table talking about issues such as funding and technology to make sure our industry is protected.”



Dave Raymond



ENGINEERING YOUR EXIT STRATEGY

Sell or expand your business with the help of Allen Business Advisors. With a combined 35 years of experience as commercial loan officers, we bring banking sensibility to every sale. We advise at every stage, preparing businesses for sale, maximizing their value, and helping business owners plan for their next phase of life.

SALES & ACQUISITIONS

EXIT PLANNING

HELPING INDIVIDUAL OWNERS & PARTNERS



**ALLEN BUSINESS
ADVISORS**

Contact John Allen for a consultation.

781-443-4874

john@allenbusinessadvisors.com

allenbusinessadvisors.com

Boston | New York | DC

“Firms need to develop high-level relationships at the board and CEO levels of their clients,” Jackson says. He points to global consulting firms like Accenture, Deloitte and PwC that arose out of accounting firms and have higher-level access to executives. Now they are starting to encroach on engineering consulting, he says. “They already have these relationships at the CEO and the board levels because they help with strategic planning and business practices, which can give them an edge,” Jackson says.

And it’s not just relationships with the C-suite that firms need to nurture. “Business strategies also have to include investments in our staff to make sure they are being innovative and creative. That is going to save our industry,” Barrett says.

DIVERSITY AND INCLUSION

Investing in professional staff also means investing in diversity and inclusion, Kothari says. “I strongly believe that our industry and profession will be strongest when we embrace diversity to its fullest. By that I mean diversity not only across gender and race, but diversity across regions and our vast country—diversity in types of services, diversity in type and size of firms and diversity of clientele. This would not only benefit our individual member firms but their respective member organizations and our council and industry as a whole.”

Inclusion also means creating a culture where everybody feels that they belong and that their ideas are valued, Roberts says. “Data has shown that you are going to have better

financial success, your teamwork will be better, you will be a more creative and innovative company as you move along the continuum of diversity and inclusion, which will also help firms find talent and attract the best and brightest.”

Simpler says that firms should also diversify their portfolios in terms of types of projects, clients and geographies where they work to protect themselves from uncertainty. “We needed to change our mentality—the way we look at projects and the business—and be more flexible and adaptive,” he says.

In the end, each firm will have to choose the path that is right for them, Kothari says. “If you make sure your colleagues, partners or clients succeed, then we would all succeed together. All boats rise together in a rising tide.” ■

Stacy Collett is a business and technology writer based in Chicago.



Charles Gozdziwski

RECORDS

“An NCEES Record makes it fast, easy, and convenient to apply for additional P.E. licenses in other states.”

Alexander Zuentd, P.E.
Zuentd Engineering
Record holder since 2011



NCEES
advancing licensure for
engineers and surveyors

**National Council of Examiners
for Engineering and Surveying®**
P.O. Box 1686, Clemson, S.C. 29633
864.654.6824

Build your NCEES Record today.
ncees.org/records