THE FUTURE IS ENGINEARING

ENGINEERING CHANGE LAB USA

Summary of Summit #5

March 4th - March 5th, 2019

Kansas City, MO

Overview/Introduction

The fifth Summit of the Engineering Change Lab – USA was held at the Blue Valley Center for Advanced Professional Studies (CAPS) in Overland Park, Kansas, on March 4 – 5, 2019. There were 50 attendees from the United States and Canada, representing a diverse group of organizations (industry, professional organizations, consultants, licensing agencies, academia, public agencies and technology) (see attached attendees list).

This Summit, and the work conducted, continues the ongoing collaboration of the lab, dedicated to moving the profession towards its highest potential through stewardship of technology and the environment on behalf of society. During Summit 5, we continued the deep dive of our previous summits, spending significant time on K-12 education and public policy discussions, while also advancing our ongoing initiatives.

Progress to Date

Engineering Change Lab – USA (ECL-USA) was founded on the premise that the world is changing faster than it has in all human history. A core belief of the stakeholders of ECL-USA is that the engineering community must change and adapt to re-establish our role as leaders and to serve as stewards of technology; the environment; and the public health, safety and welfare. We believe that the change and adaptation must touch the whole system of the engineering community – life-long education, engineering practice in both public and private sector, industry, research, and licensure.

Out of this challenge and imperative came the ECL-USA Mission, to be a catalyst for change within the engineering community, helping it reach its highest potential on behalf of society.

In 2017, the group of founders of ECL-USA created a Call to Action to our closest associates in the engineering community to take part in an initial summit. The Call to Action was centered around this question:

> "How can we develop a new vision to realize the profession's full potential as stewards of technology on behalf of society?"

ECL-USA Summits 1-3 were held in Omaha in August 2017, February 2018 and June 2018. Summit 4 was held in Denver in October 2018. Each summit has been attended by 40-50 stakeholders. With each summit the diversity of our participants has increased, and we have progressed toward understanding the deep questions related to the future of engineering; developing and refining our mission and vision; and in launching focused initiatives related to our mission. Three summits are planned for this year (2019).

One of the interesting and informing aspects of the summits are the perspectives of our stakeholders regarding the future of engineering. The perspectives we have heard express both hope and concern. Hopeful perspectives include the groundswell of interest in positively impacting the future of the profession and the promise of technological advances. Perspectives of concern include the lack of diversity in engineering; commoditization; threats to licensure; fragmentation of the engineering community; the

trend toward short-term, project-focused thinking; loss of recognition of engineers as leaders in public policy; difficulty in attracting the best and brightest young people; and potential unintended and harmful impacts from technologies.

From the summits, key principles of operation have emerged, defining the type of organization that will be supported. We have incorporated these principles into the vision for ECL-USA:

Act as stewards of the public interest.	Promote trust and mutual respect.	Combine reflection and inquiry with experimentation and action.
Be agile, flexible and organizationally light.	Provide an open-source environment that encourages new ideas to emerge.	Embrace diversity and ensure inclusivity across the whole system of the engineering community.

To date ECL-USA has operated as a 100% volunteer organization. This will need to change to ensure effectiveness in spreading our message and affecting change. The leadership of ECL-USA is taking the initial steps:

- We have incorporated ECL-USA as a non-profit entity.
- We have started the process of obtaining 501(c)(3) status.

In late February, ECL-USA was awarded a grant in the amount of $125,000 from the National Council of Examiners for Engineers and Surveyors (NCEES). The grant is contingent on receiving 501(c)(3) status. NCEES also left the door open for additional funding next year. The feedback received from NCEES is that they share the belief that change and disruption are coming, and they want to be proactive participants. With this financial support ECL-USA can now proceed to:

✔ Hire staff.	✔ Expand outreach.	✔ Implement our communications/marketing plan.
✔ Ensure that we sustain activity between our summits and engage stakeholders who are unable to participate in the summits.	✔ Provide financial support for greater student, public sector and non-profit participation.	✔ Seek additional funding sources.

Additionally, the lab launched our website in February 2019 at: www.ECL-USA.org and continued working on our focused initiatives (see the Advancing Focused Initiatives section, later in this report).

The work of ECL-USA is important to the future of the engineering community. Our sole focus on exploration of the future of engineering is unique. The engineering community should play a leadership role in the challenges that society faces both from technological advances and from environmental pressures. The work of ECL-USA can influence that future role.

Exploring K-12 Education & Engineering

Provocation: Shaping STEM Strategies - Lisa Cole, K-12 Educator, Durham District School Board, Currently Seconded to the Ontario Ministry of Education

Lisa began by asking and giving answers to the question: **Why is K-12 STEM curriculum so important?** We don't have enough future workers for needs in the STEM professional and industry fields, and we need to diversify the students in the STEM fields. It's not always about having students pursue STEM careers – we need to provide an equitable opportunity to help students decide about a possible STEM career. And, increasing the number of students exposed to STEM could increase diversity. Additionally, there are valuable skills learned in a STEM program that will help students throughout their lives. For example – what does it mean to be a responsible user of technology? How do you assess technology and select appropriately? All students need to understand technology and make informed decisions, an area where STEM programs can help.

STEM education is not an event, it must happen in a long-term and sustainable manner. It's a complex system, and we need to identify the leverage points and shift peoples' thinking. What should a STEM classroom look like? In Ontario, they are using several initiatives to explore the system:

1. Public Schools of the Future: The Engineering Outreach Specialist – University of Ontario Institute of Technology. https://engineering.uoit.ca/outreach/ (Note: Lisa explained that public schools have a hard time working directly with industry, and can best use universities or non-profits as a bridge, see below).

2. Working with science centers and museums – one example is the STEAM Residency Program & Cultural Collisions at the Ontario Science Centre. http://originnetwork.web.cern.ch/content/origin-canada

As noted above, Lisa has seen that it is hard for schools to work directly with industry, because of some fundamental barriers:

- Public schools don't want a perception of choosing preferred partners – is it advocating for a product (one over another)?
- They must keep student data private.
- It makes donations easier if they partner with a university or other non-profit.
- There is a gap in educators' understanding of industry, and vice versa.

Provocation: Shaping STEM Strategies - Beth Cady, Acting Director, Program Office, National Academy of Engineering

The NAE is focused (https://www.nae.edu/19582/Bridge/51063/51071.aspx) on increasing the quantity, quality and diversity of the US engineering workforce, which is necessary to achieve our nation's goals. Part of the issue is Perception: Beth shared the results of several surveys conducted by NAE between 1998 and 2014, regarding the public perception of scientists and engineers. Overall, the public is now less informed about scientists and engineers than 20 years ago.

Other observations from the polls:

Engineers score low on contributing to critical societal activities (decreasing score moving down):

- Preserving national security.
- Improving the quality of life.
- Protecting the environment.
- Saving lives.

More people in 2014, versus 2003, agreed with this statement:

Engineers are responsible for creating things that are harmful to society.

Do we even own the term "engineers"?

The NAE has also evaluated the question of diversity:

On the one hand, more women are going into engineering, particularly in environmental and bioengineering/biomedical. However, as a percentage, the graduation rate for women is stuck. In 2000 women received 19% of the bachelor's degrees awarded by engineering schools in the US. In 2013 the women's share was the same, despite many efforts to move the dial on this measure.

Although more minorities are also going into engineering (by actual numbers) this representation as a percentage has also stalled.

Pathway Forward- To increase the quantity, quality and diversity of engineering, the NAE is undertaking an effort to change the conversation. They will focus on inspiring young people to pursue a career in engineering and science, and on changing the public perception of our profession. They have developed Positioning Statements to help with these goals:

No profession unleashes the spirit of innovation like engineering. From research to real-world applications, engineers constantly discover how to improve our lives by creating bold new solutions that connect science to life in unexpected, forward-thinking ways. Few professions turn so many ideas into so many realities. Few have such a direct and positive effect on people's everyday lives. We are counting on engineers and their imaginations to help us meet the needs of the 21st century.

From this larger statement, the NAE continues to develop shorter messages and ways to change the public's perceptions, including tying the messages to their Grand Challenges (http://www.engineeringchallenges.org/) efforts.

Small Group Work on Exploring K-12 Education & Engineering

Following Beth's and Lisa's talks, the attendees broke into small groups, and were asked to consider the statement: "Imagine a world where women and under-represented minorities were proportionally present and engaged across the engineering community..." We then reflected on questions surrounding: "what is happening in the K12 educational system, what is the learning experience/environment like, what changes have happened, and what barriers have been overcome?" The groups then reported out on their observations, which included:

1 **STEM would be fully integrated into all course work.**	**2** **There would be more women and under-represented minority teachers.**	**3** **Students would have access to diverse mentors.**
4 **Teachers would be equipped with engineering skills (K-6 teachers are all literate with regards to STEM).**	**5** **There would be no biases in career counseling, and the guidance counselors know what engineers do.**	**6** **There would be STEM opportunities in all school districts.**
7 **The educational system would be responsive to students' interests/ individual and collaborative learning/ students would be engaged and excited about school.**	**8** **We would remove silos, increasing diversity in students, teachers and disciplines.**	**9** **Engineering salaries would be equitable and commensurate with the degree.**
10 **Engineers would be part-time teachers, and industry would support partnering.**	**11** **The culture of engineering would shift from individual to team/ collaborative.**	**12** **Parents would be more engaged and supportive.**
13 **We would have removed the "not cool" factor from studying engineering.**	**14** **There is an "interpretative dance" approach to learning.**	**15** **Mentoring and role models have increased.**
16 **We are competitive about calling engineers into "service".**	**17** **Do we need to "fix" engineering? Change the focus from producing "stuff" to providing "human benefits," and emphasize that it is applied science.**	**18** **Change the standardized testing models, and use processes that can identify and track students' attributes and interests early on.**

Provocation: Learning form the CAPS Program – Corey E. Mohn, Executive Director, Blue Valley Center for Advanced Professional Studies.

At the Center for Advanced Professional Studies (CAPS), they are focused on disrupting education, as the status quo is not the answer. It is a half-day program at the high school level, where the students get full immersion in authentic professional project work. It is structured around the overlap of strengths, passions and interests, focused on answering the question: "what in the world is something you'd like to solve?" It is this focus that leads to passion. There are now 49 CAPS programs around the country.

Corey reflected on three books that are pivotal to what they are doing. The Happiness Advantage (Shawn Achor), outlines the difference between a job (a paycheck), a career (working to succeed), and a calling (work is the end in itself). Twelve percent of the population say they are living their calling – CAPS is trying to help kids find their calling. In Bold (Peter Diamandis and Steven Kotler), the authors discuss a "do-it-yourself" community, where a group of people are united around a massively transformative purpose. They also note that passion is the differentiator, and that deep engagement requires building human bridges. Finally, in The Cathedral Within (Bill Shore), the author discusses the power in creating something that endures, especially when focused on giving back.

In summary, Corey challenged us to continually ask the questions: **"What If" and "Why Not"?**

CAPS Facility Tour

The Summit attendees broke into smaller groups, led by CAPS students, and toured the CAPS facilities. After the tour, we discussed our observations about the facility and the program:

- We should not be afraid to change things – think big, ask "what if" questions, and gain passion.
- The facility is set up to enhance cross-functional collaboration and reduce silos.
- The students demonstrated a sense of "purpose."
- What has been considered untraditional learning is becoming traditional. Disruption is the norm for this program.
- These students are taking personal responsibility for their learning.
- Space matters, and the design of the facility allows the students to test drive their potential careers.
- Hands on learning can turn the traditional teaching model on its head. We should look to the students for "answers." Embedding engineering firms in the learning is a good way to enhance this experience.
- This program shows the benefit of early and strong engagement of industry with education.
- In our Education initiative, we need to make sure we touch all branches of education. K-12 may be an easier opportunity for change than higher education.

Exploring Engineering & Public Policy

Provocation: Public Policy Engagement – Steve Stagner, Past Executive Director, ACEC Texas

Steve Stagner spent his career in public policy, including a significant tenure on behalf of ACEC Texas. He discussed three areas of engagement: the electoral process, big policy issues, and "small ball" policy. He reminded us all that we get the government we deserve, and that there is a role for those who understand technical issues.

In the electoral process, we must recognize that it is currently a mess, and impacted by technology and current trends in communication. There is no gate keeper in these arenas – communication has become a conduit for what people want to hear, and he recommended the book Emergence of Truth by Jill Abramson.

Big policy includes initiatives, referenda, amendments, etc. Texas engineers have had success when they started with a vision, substantiated that vision with facts and research, showed that there was a need for the projects and for funding, and applied a reasonable yet aggressive understanding of the political process. He acknowledged that the tactics in politics can be tough and unpleasant, and we need to figure out how to participate in that world within our ethical constraints. They also had to be willing to raise the big dollars required to fund the policy initiative or campaign.

"Small ball" policy at the local level requires the cultivation of technically trained people who also understand how policy works. It's about personal relationships, and to be successful engineers should be:

Smart, but humble.	**Good at interacting with others.**	**Not dogmatic.**	**Tolerant of compromise.**
Experienced in the process (they should be able to get their Congressman on the phone).			

Steve offered the following advice to ECL-USA:

1
There is a crying need for people who "get it" – consider a leadership academy and bring those engineers together to teach others. Involve engineers who have been elected to office.

2
We can influence and generate good outcomes, with the help of personal relationships and the cultivation of good leaders.

3
Recognize that it is no longer a "gentlemen's sport" and be prepared.

4
There is a huge gap in the critical thinking skills of our citizens. We need to figure out how to work within that reality.

5
Can we harness powerful technology to build the system we want?

6
Don't minimize our influence – focus on small ball policies where relationships are important. We can make a huge difference in this area.

7
Work with the trade associations to develop tools for messaging and talking points.

Provocation: Personal Experiences Leading Public Policy Initiatives – Mike McMeekin, Lamp Rynearson; Edwin Friedrichs, Walter P. Moore

Mike McMeekin and Edwin Friedrichs talked about initiatives they had been involved in – Mike with Omaha by Design and Edwin with Renew Houston. Omaha by Design was focused on making Omaha a better city by developing an urban design element of the city master plan followed by changes to the zoning code and ordinances (http://www.omahabydesign.org/). Renew Houston was an effort led by engineers to pass a referendum to significantly increase funding for streets and drainage. Both efforts were successful.

After listening to these examples, the group had the following observations:

- We can all get involved in smaller ways and still have influence.
- We should expand our efforts and get Google, IBM and Amazon involved in our public policy efforts.
- You need to have a specific, measurable ask.
- Local and state governments have the potential to do great things and can move the ball.
- Having a common story, common definition of the problem and common facts are keys to success.

Small Group Exercise

The group then broke into small groups to spend time exploring how engineers could influence public policy. The groups first brainstormed public policy issues that the engineering community has a significant "stake" in, and where we could offer leadership due to our expertise. Then, each group chose an issue to work on and considered questions such as: at what level would you intervene, what would be your objective, how would you intervene, what does the political landscape look like, and where would you start? The issues selected by the small groups included:

Reducing single occupancy vehicles.	**Mitigating the effects of extreme weather on infrastructure.**	**Energy policy / climate change.**
Stormwater management.	**Smart cities.**	**Increasing the gas tax.**

After working through these questions and listening to each group's efforts, the following advice was offered to the public policy initiative:

- Be the catalyst to bring people together and get things done.
- Develop a tool box to help engineers make connections and to help people get involved. The tool box should include a repository of best practices.
- Be the voice of the profession on issues that transcend technical specialties and that are tied to our stewardship mission.
- Consider hiring a public relations firm to help with this effort.

Advancing Focused Initiatives

Engineering Education

This group is guided by the idea: *Imagine if, guided by educators and mentors who understand emerging technologies, every student was prepared and excited to address challenges/problems by applying science and math concepts, using an engineering approach.*

During this summit, this group expanded the "to do" list from one item to three. We started by refining our discussion on Connecting Resources to Educators from Summit 4 and then followed with the two topics from speakers in Summit 5 (Diversity and Disruption).

1. Connecting Resources to Educators

A. Exists to a certain extent- www.LinkEngineering.org- K-12 education focused. Can ECL-USA help augment? How could we leverage them to build platform? What resources can we provide?

B. Existing groups to assist with developing?

- NSTA (https://www.nsta.org/), CSSS (http://www.csss-science.org/), ASEE eGFI (https://prek-12.asee.org/)- Beth Cady.
- AAPT (https://www.aapt.org/)- Lisa Cole
- Boston Museum of Science (https://www.mos.org/) – Alan

C. Need to connect with teachers from various types of schools to see what would work to implement- assume they have the time and skills to do this. Create incentives.

D. Connect Colleges of Education to Colleges of Engineering- start w/ Engineering Dean's Council, similar group for Education Deans? Can we facilitate? https://www.asee.org/member-resources/councils-and-chapters/engineering-deans-council NC State Education Course taught by EE faculty as an example.

E. Talking points to build relationships with K12 educators. Engineering community has obligation to reach out. Training them to reach out.

F. How could we develop maps to help educators find where engineering resources are? ACEC Member Organization list from Chandler and an ECL-USA member list from Dan or Kyle.

2. Diversity in Education

A. Find successful programs like Gold Shirt initiative at Colorado University (https://www.colorado.edu/bold/goldshirt) – one-year intensive program. Are engineering students, live in honors dorm. Examples @ other institutions (University of Manitoba) for indigenous students. Alan to address.

B. ECL-USA supply industry support/$$/pressure.

C. Develop orchestrated effort for industry to support mentoring.

D. Recognize Industry/Education diverse speakers- ECL-USA List.

E. ECL-USA summit to include representatives from National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), Society for Advancement of Chicanos and Native Americans in Science (SACNAS), Society of Women Engineers (SWE).

F. National School Board Association (NSBA) Representative – There is a department called Equity in Member Service.

3. Disruption

A. Easier to disrupt K-12 and use that as leverage to move higher education to action for change.

B. ABET accreditation is contemplating a project-based learning approach. Next summit invite Ron Ulseth- Iron Range Engineer.

C. Project Lead the Way (PLTW) has thousands of programs. Are we encouraging CAPS Network into those programs?

D. Advanced Placement for Engineering in K12. Invite Daryl Pines to future summits, 100 schools?

E. K-12 engineering standards related to engineering (Tamara Moore @ Purdue).

F. Teach STEM.

G. Include public policy impact.

Future of Consulting Engineering

The Future of Consulting Engineering initiative had an engaging and productive discussion at the ECL-USA Kansas City Summit. The goal of the discussion was to identify topics of interest to the group that could form the outline of a white paper or presentation. The group was asked to identify the biggest opportunities and threats to consulting engineering in the next 5 to 10 years, vote for the most important, and then further define and discuss those topics identified as the most important. A summary of the brainstorming and discussion results is provided below:

BIGGEST OPPORTUNITIES AND THREATS TO CONSULTING ENGINEERING (# VOTES):

Understanding what our clients are buying and where we bring value (4)

- Differentiation
- Expansion of services
- "Don't have to own it to sell it"
- Finding "unmet" or "unidentified" needs
- Trusted advisor role
- Data management and exploitation/action
- Life cycle management of assets

Changes in technology (4)

- Develop it, own it, buy it?
- Improve efficiency – fewer hours – pay for it?
- Liability shifts
- Skill sets needed in our firms – programmers?
- Big data management
- Use technology as a differentiator

Getting talent and talent management (4)

- Independent contractors
- Flexible schedule demands from staff
- Contingent work force
- Compensation methods
- Brain drain – boomers
- "Power skills" bringing greater value
- Collaboration

Changes in firm culture and diversity (4)

- Clear expectations – accountability – why?
- Upward accountability
- Inclusive/fair policies – equitable

BIGGEST OPPORTUNITIES AND THREATS TO CONSULTING ENGINEERING (# VOTES):

Consulting engineering business model and billing for services (3)	Changes in project delivery methods (3)	Industry consolidation (3)
Public policy and changes in laws (3)	Funding methods for projects (2)	Knowledge management and knowledge transfer (2)
Move to a people-based business – specific expertise and specialization vs general (1)	Changing and new revenue sources (1)	Globalization and outsourcing/ off shoring (1)
Coopetition and partnering (0)	Licensing (0)	

The group discussed next steps for the initiative and agreed that more information gathering and data is needed. We discussed the audience for our work with the sense that it should be consulting engineering firms and leaders – our work should benefit the consulting engineering industry by being better prepared for the future. We also discussed the potential to identify future "provocateur" speakers on our topic.

New Models for Engineering Licensure

The New Model for Engineering Licensure group conducted a workshop on October 24, 2018, and explored the question: If we had to do it all again, what would licensure look like? An outcome of the workshop was to begin the Strategic Doing process and create a framing statement. The framing question is: **Imagine a future, where the practice of engineering is regulated in a simple and transparent manner that enhances public health, safety, and welfare and technological development for all. What would that look like?**

In October, the group identified its first step: Each person in the group committed to contact three to five people, share the framing question, and ask each contact for their reaction to the framing question—including what key features it needs to have to realize the imagined future. The next step is to aggregate the results and identify key factors.

At Summit 5 the group shared responses they had received for the framing question. There were many interesting ideas, ranging from small changes to the current licensure model, to questions about how to support regulation of future engineering disciplines, to open models that challenge the current fundamental notions and frameworks of professional regulation and how to best provide for protection of public health, safety, and welfare. The group discussed possible next steps but did not identify specific action items. The group will consolidate the ideas received and continue discussions between sessions.

Mapping Technological Driving Forces Impacting the Engineering Community

Report Pending

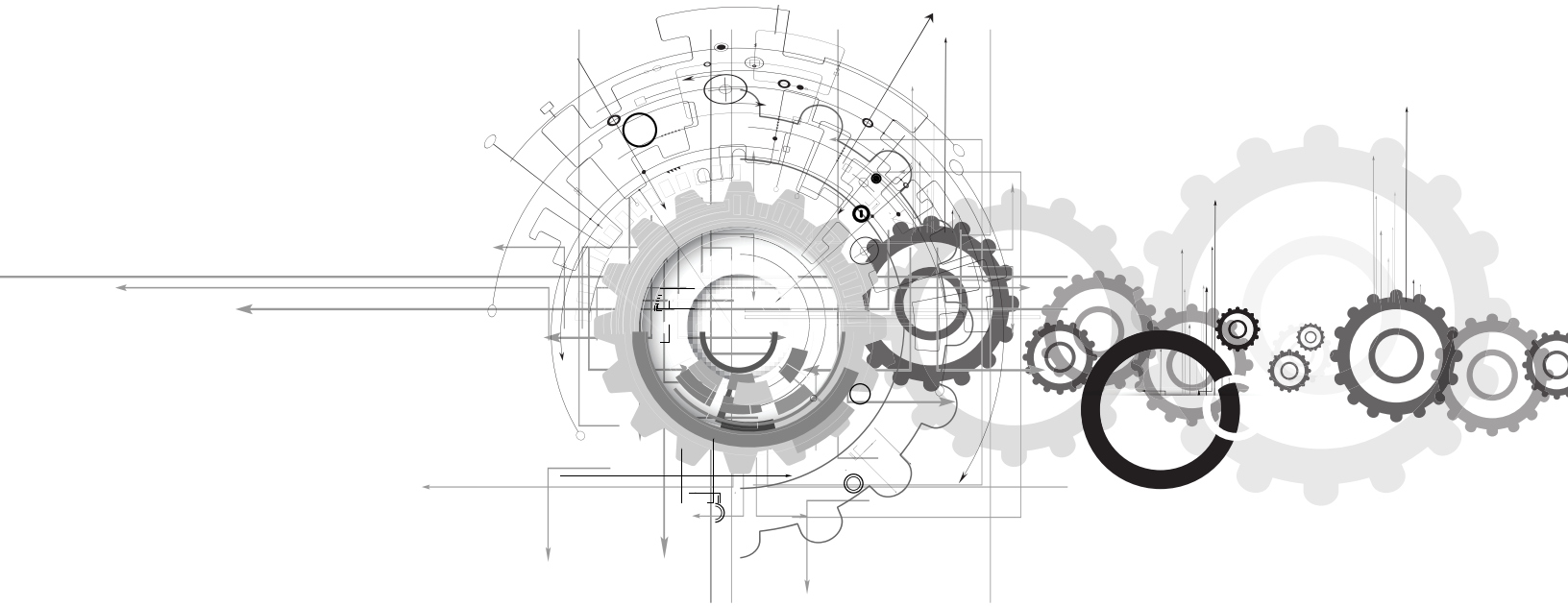
Public Policy

Report Pending

Action Plan for Next Steps

The next summit is scheduled for July 15- 16, 2019, in Berkeley (for more information, visit ecl-usa.org). This Summit will be a joint meeting with the ECL in Canada. Between summits, work on the initiatives will continue, and the Steering Committee will work on:

- Obtain our 501(c)(3) status from the IRS.
- Develop a job description for our initial staff.
- Expand outreach.
- Implement our communications / marketing plan.
- Ensure that we sustain activity between our summits and engage stakeholders who are unable to participate in the summits.
- Seek additional funding sources.
- Increase the diversity of stakeholders and provocateurs.
- Plan the next series of summits, including locations and topics.



FUTURE OF THE ENGINEERING PROFESSION SUMMIT 5

2019

KANSAS CITY, MO

ENGINEERING CHANGE LAB USA

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STEERING COMMITTEE

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Edwin Friedrichs ..... Walter P. Moore
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ENGINEERING CHANGE LAB USA

SUMMIT DINNER SPEAKER

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For over 40 years, Fred Merrill, Jr. has been actively involved in the commercial real estate business, including retail, office and mixed use in Kansas City, Phoenix, Dallas and Washington, D.C. After receiving a Bachelor of Science degree majoring in Political Science from Kansas State University, he graduated with a real estate and finance M.B.A. from Southern Methodist University in Dallas, Texas. Over his entire career, Fred has arranged financing for or developed office, mixed-use and retail projects in the metropolitan areas of Kansas City, Dallas, Phoenix, and Washington, DC. He has been an active member of the National Association of Office and Industrial Properties, Building Owners and Managers Association, International Council of Shopping Centers, and various civic organizations. Fred is a member of the Urban Land Institute, and currently serves on the Urban Land Institute's Entertainment Development Council.

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Dr. Elizabeth Cady is the Program Officer for the National Academy of Engineering. She works on projects that examine and enhance systems for the formal, informal, and lifelong education of engineers as well as projects to improve diversity and inclusivity in engineering education and the workforce. Beth earned M.S. and Ph.D. degrees in Cognitive and Human Factors Psychology from Kansas State University, and a B.A. in psychobiology and political science from Wheaton College in Massachusetts.

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Lisa Cole is a high school physics/science and mathematics teacher with 14+ years of classroom experience, and was Head of Science at Uxbridge Secondary School and the past president of the Ontario Association of Physics Teachers. Lisa received her undergraduate degree from McGill University in Physics and her Education degree from Queen's University. She completed a Master of Education degree at York University with a focus on Women in Physics and STEM.

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Corey Mohn is the Executive Director of the Blue Valley Center for Advanced Professional Studies (CAPS), a program that empowers high school students to fast-forward into their future through hands-on work, real-world business projects, and the development of professional skills. Prior to CAPS, Corey served as the Director of Statewide Programs for the Kansas Center for Entrepreneurship (DBA NetWork Kansas). Corey holds Bachelor of Arts degrees in Political Science and Economics from Washington University in St. Louis, and a Masters in Business Administration from Baker University.

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Steve Stagner retired at the end of 2018 as President of the American Council of Engineering Companies (ACEC) of Texas, the business association that represents Texas engineering firms. He is a native of Tyler, Texas and holds degrees from Southern Methodist University and the University of Texas at Austin. Steve coordinated ACEC Texas' governmental affairs policy for over 25 years, working extensively on issues such as government competition with the private sector, tort reform, procurement matters, alternative project delivery, transportation policy, tax policy, and other issues.

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Mark Abbott, PE, MBA, spent 15 years working in the heavy industrial consulting engineering industry in Vancouver, Canada, before leaving to join the executive team of Engineers Without Borders Canada in Toronto eight years ago. Five years ago, Mark transitioned to help launch and become the founding director (animator) of the Engineering Change Lab, a collaborative platform comprised of senior leaders representing 40 + organizations from across the engineering community in Canada, working together to understand and unlock the higher potential of engineering contributions to society.

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Dr. Ben Amaba holds a PhD. degree in Industrial & Systems Engineering, a M.B.A./M.S. degree in Engineering and Operations, and a B.S. degree in Electrical Engineering. He is responsible for industrial manufacturing, infrastructure and logistics solutions. Ben is the Chief Innovation Officer for the Industrial Sector – North America for the IBM Watson and Cloud Division. His focus and interest is in artificial intelligence, blockchain, robotic process automation (RPA), software engineering, data analytics, Internet of Things (IoT) and cloud technology.

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Stacy Bartoletti is CEO of Degenkolb Engineers and is active in organizations and community programs including the American Council of Engineering Companies (ACEC), the Council of American Structural Engineers (CASE), the Washington Seismic Safety Committee, and the United States Resiliency Council (USRC). Stacy is a leader in Washington's policy initiatives to improve seismic safety of critical lifelines, has testified before Congress on seismic safety, and has actively participated in the development of the CREW Cascadia Subduction Zone Earthquake and EERI Seattle Fault scenarios.

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A broadly experienced association executive, Linda Bauer Darr spent the last four years as CEO at the American Short Line and Regional Railroad Association (ASLRRA) where she was able to bring about positive change and grow the reputation and stature of ASLRRA. Prior to that, Linda led the American Moving & Storage Association (AMSA) as CEO from 2007 – 2014. She also served as Senior Vice President for Policy & Communications at the American Bus Association, (ABA) and Vice President for International Affairs at the American Trucking Associations (ATA). Between her assignments at ATA and AMSA, she was appointed Deputy Assistant Secretary, Budget and Programs at the U.S. Department of Transportation where she managed a $50B annual budget. Linda is a graduate of University of Maryland and completed the Executive Education Program at Harvard Kennedy School.

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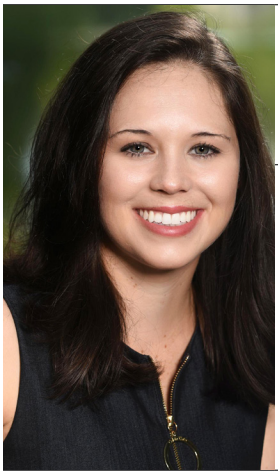

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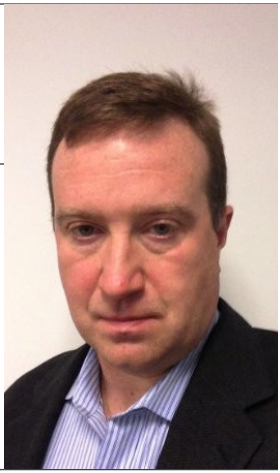

Aaron Castelo is the Director of State and Local Government Relations for the American Society of Civil Engineers (ASCE), and has more than 20 years of experience in state government relations, most of it with professional and trade associations based in Washington, D.C. He holds the Certified Association Executive (CAE) certification and previously served on the Board of Directors of the Washington Area State Relations Group (WASRG). Aaron is a graduate of Indiana University with a double major in journalism and political science. He has an M.A. in political science from Ball State University, and is a graduate of the U.S. Chamber of Commerce Institute for Organization Management.

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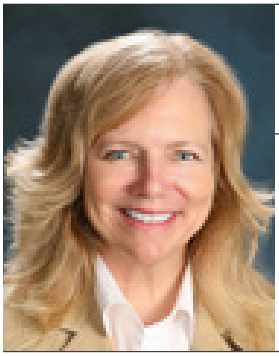
Rick Guerra is President and CEO of Jose I. Guerra, Inc., a full-service consulting engineering firm based in Austin, Texas. The firm provides a comprehensive range of high quality civil, structural, mechanical, electrical, and plumbing engineering services throughout Texas.



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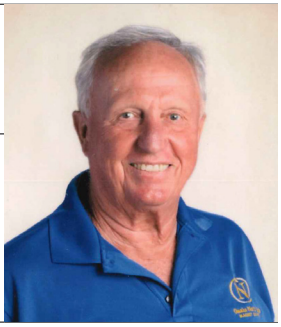
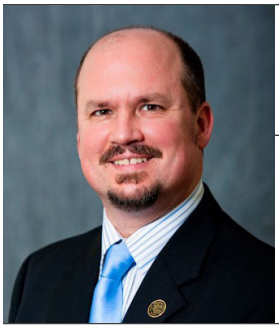


Lee Kallstrom has worked with high school engineering students for the past 27 years. He taught at Omaha North High Magnet school in the engineering magnet for 18 years, retired, and now facilitates a STEM program in CAPS at Omaha Westside Schools. Lee's primary passion is providing real-life experience in in architecture, engineering, and design.



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Lance Kinney has been with the Texas Board of Professional Engineers for over 17 years and is responsible for all agency programs and activities, including legislative, rule, budget, and policy issues, and represents the Board at statewide, national, and international functions. He also gives licensing and ethics outreach presentations all over the state at universities, companies, and associations.

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John Kuprenas brings over 30 years of A/E/C experience to every engagement, combining the skills of a professional engineer, general contractor, and visionary consultant. A natural leader and teacher, he builds confidence among Harris teams and clients while uniting diverse stakeholders around common goals. John enhances projects with a clear understanding of design concepts, construction execution, workflow sequencing, alternative delivery methods, and critical success factors for cost and schedule performance.

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Nancy Pridal is the CEO/President of Lamp Rynearson and is a civil engineer with a Master's Degree of Organizational Leadership. Responsible for remote office leadership, human resources, marketing and organizational development teams, she impacts current pursuits and steers the firm's future direction. Active in the community, Nancy is a member of the University of Nebraska Engineering Advisory Board, the Engineering Change Lab (ECL)-USA steering committee and the Greater Omaha Chamber Board of Directors. She is also the Chair of the Metropolitan Area Planning Association (MAPA) H2050 Regional Planning Action Committee (RPAC).

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From working as a GIS Specialist to influencing high school students as a Technology Solutions instructor at the Center for Advanced Professional Studies (CAPS), Jill Riffer embraces changes in technology to teach digital natives and new users alike how to create with their varied devices and not just passively use them. Jill's passion for technology learning includes increasing female enrollment in STEAM (Science, Technology, Engineering, Arts and Mathematics). In 2018, Jill continued her learning through attendance at KC Tech Council's informative Tech on Tap presentations and Camp Cyber.

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Colin Stalter is a problem solver with a creative outlook on civil engineering. Since graduation, Colin has had 4+ impactful years in engineering, working with many different cities and municipalities. His project experience is diverse and includes: water system studies, distribution modeling and design, water treatment facility plans, water and sewer rate studies, water tower inspections, and neighborhood sewer rehabilitation. Life outside Colin's career in engineering also involves water. He is open water certified and has been scuba diving since age 13, traveling to many destinations in the Caribbean.

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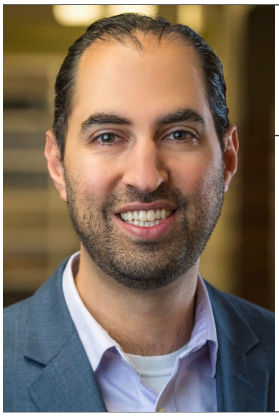

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Christopher Walcutt is the Director of Security Solutions at DirectDefense with over twenty years of experience in network design, information security, risk analysis & mitigation and compliance in the energy, financial, higher education, and manufacturing sectors. Chris specializes in security and risk strategy in the energy sector and is involved with several research initiatives involving the University of Central Florida, Soar Technology, and DARPA as a subject matter expert for energy, smart integrated infrastructure and critical infrastructure security. He volunteers time coaching the CyberPatriot Team NetRunners and is a nationally recognized Cyber Security speaker and the Air Force Association's 2016 CyberPatriot Mentor of the Year.

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Markus Weidner serves as the Chief Innovation Officer for Pennoni, a 1300-person Engineering Design and Consulting Firm with offices across the Eastern United States. His role focuses on bringing innovation to operational systems and processes, modification and modernization of existing services, and inventiveness in the creation of new solutions and service lines. Markus has 20 years of experience in the AEC industry and has served in a number of operations and technical roles – most recently as Director of Technology for NELSON, a national Architecture firm of 1200 people.

ENGINEERING
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