ENGINEERING CHANGE LAB USA

For more on Engineering Change Lab-USA, contact Executive Director Mike McMeekin at mike.mcmeekin@lamprynearson.com and visit our website www.ecl-usa.org

2019 YEAR IN REVIEW

The Engineering Change Lab – USA (ECL-USA)

is a catalyst for change within the engineering community, helping it reach its highest potential on behalf of society. In 2019 ECL-USA continued its work in fostering change and adaptation in the engineering community that results in increased contributions to addressing 21st Century challenges through ENTREPRENEURSHIP, TECHNOLOGICAL STEWARDSHIP, ENVIRONMENTAL STEWARDSHIP, and LEADERSHIP.

ENTREPRENEURSHIP

TECHNOLOGICAL STEWARDSHIP

ENVIRONMENTAL STEWARDSHIP

LEADERSHIP

2019 YEAR IN REVIEW

ENGINEERING CHANGE LAB USA

SUMMIT 5 CENTER FOR ADVANCED PROFESSIONAL STUDIES, OVERLAND PARK, KS

01 DIVERSITY IN ENGINEERING

- Percent of women engineering graduates is stuck at about 19%.
- Percent of minority graduates has also stalled.

K-12 EDUCATION & ENGINEERING 02

- Drop-in, one-time presentations are not effective.
- How do we assist in closing the gaps between educators' understanding of industry and vice versa?
- Need commitment to extended involvement centered around experiential learning.

03 PUBLIC POLICY

- Engineers need to contribute more at a time when there is a huge gap in the critical thinking skills of citizens.
- Engineers can make a difference at the local level.
- Important public policy issues for engineers – climate change, energy, resilience, smart cities, infrastructure funding.

PUBLIC PERCEPTION OF ENGINEERING 04

- Public is uninformed about work of engineers.
- Public does not associate engineers with contributions to critical societal needs.
- Significant portion of people believe engineers create things that are harmful to society.

SUMMIT 6 BERKELEY CITY CLUB, BERKELEY, CA

ENGINEERING ETHICS IN A WORLD OF RAPID TECHNOLOGICAL CHANGE

01
Engineering community needs to proactively address its role in helping society shape technology in our best interests.

02
Ethical engineering decisions of the future require new skills – systems thinking, reflection, and multi-disciplinary collaboration.

03
ECL-USA can lead in the exploration of re-inventing the ecosystem that engineers practice in as a system that addresses ethical dilemmas and decisions of the future.

ENTREPRENEURSHIP & ENGINEERING

01
Engineer entrepreneurs offer value beyond traditional economically oriented engineers.

02
Recognizing the contributions of engineer entrepreneurs will aid in attracting young people to engineering.

03
Great opportunities exist in the linkage of engineering, entrepreneurship, and community or societal driven purpose.

2019 YEAR IN REVIEW

ENGINEERING CHANGE LAB USA

SUMMIT 7 NORTHEASTERN UNIVERSITY, BURLINGTON, MA

ENGINEERING CHALLENGES OF THE 21ST CENTURY

NAE Grand Challenges centered around themes of sustainability, health, security, and the joy of living.

ASCE Future World Vision macro trends shaping the future autonomous vehicles, alternative energy, climate change, smart cities, high tech construction, policy and funding.

Implications for engineers collaboration, engagement in public policy, benefits of entrepreneurial risk-taking balanced with ethics.

ROLE OF EMERGING TECHNOLOGIES IN SOLVING 21ST CENTURY ENGINEERING CHALLENGES

Greatest opportunities for high rewards in the future exist through embracing new technologies as sources of value creation

ECL-USA can contribute to learning that will foster change and adaptation in the engineering community that results in increased contributions in entrepreneurship, technological stewardship, environmental stewardship, and leadership.

AMERICAN SOCIETY OF CIVIL ENGINEERS FUTURE WORLD VISION

Resilient Cities

Progressive Megacities

Dispersed Settlements

Unequal Enclaves

NAE GRAND CHALLENGES FOR ENGINEERING

NATIONAL ACADEMY OF ENGINEERING

- Advanced Personalized Learning
- Make Solar Energy Economical
- Enhance Virtual Reality
- Reverse-Engineer the Brain
- Engineer Better Medicines
- Advance Health Informatics
- Restore and Improve Urban Infrastructure
- Secure Cyberspace
- Provide Access to Clean Water
- Provide Energy from Fusion
- Prevent Nuclear Terror
- Manage the Nitrogen Cycle
- Develop Carbon Sequestration Methods
- Engineer the Tools of Scientific Discovery

ECL-USA ORGANIZATIONAL MILESTONES

01 *Received grant from NCEES.*

02 *Incorporated as Non-Profit and Approval of Non-Profit Status from IRS.*

03 *Mike McMeekin Hired as 1st Executive Director.*

04 *Recognition in PE Magazine.*

05 *Outreach in the Engineering Community.*

- NCEES Board of Directors Briefing
- ACEC Georgia Summer Conference Presentation
- Society of Fire Protection Engineers Annual Conference Keynote Address
- National Association of Engineering Student Councils Webinar
- National Council of Structural Engineers Association Conference Presentation
- Geoprofessionals Business Association Conference Presentation

ENGINEERING CHANGE LAB USA

ENGINEERING CHANGE LAB – USA 2019 YEAR IN REVIEW

Join us in 2020 for our next two summits.

Summit 8 will be held at the Texas Medical Center Innovation Institute in Houston, Texas on March 10 and 11, 2020. The themes of Summit 8 will be exploration of the future of engineering through the lens of biomedical engineering and the stewardship role of engineers with respect to climate and extreme weather challenges.

Summit 9, the Engineering Ideas Institute, which will be held from July 29 – July 31, 2020 at the Colorado Chautauqua in Boulder, CO. Summit 9 will be an extended discussion for industry thought leaders who want to deepen the inquiry about the future of engineering.

Remember to check out the ECL-USA website - https://ecl-usa.org and
ECL-USA Linked In page - https://www.linkedin.com/company/engineeringchangelabusa/?viewAsMember=true
for current information regarding ECL-USA, including summit reports, information on focused initiatives, and more.