Rice E&C Forum
Waiting on – E&C Digital Transformation
2:30 to 4:15 PM

NOVEMBER 13, 2018
RICE UNIVERSITY
“Waiting on – E&C Digital Transformation”

- Introductions
  - Moderator – Nrupa Shah, Director Business Development Jacobs
  - Dave Lafferty, Scientific Technical Services
  - Prabu Parthasarathy, VP Intelligent Operations – Automation and Control, Wood
  - David Makin, VP Technology, Jacobs
  - Randy Williams, Director of Global Accounts, AVEVA

www.forum.rice.edu
“Waiting on – E&C Digital Transformation”

- Industrial Revolutions
- Industry context of 4.0
- Our connected world
- What does it mean? Where are we? Where are you? What is holding you and I back? Who pays?
- How do you move forward?
Industrial Revolution to 4.0

Empowering Corporations

First Industrial Revolution
through the introduction of mechanical production facilities with the help of water and steam power

Second Industrial Revolution
through the introduction of a division of labor and mass production with the help of electrical energy

Third Industrial Revolution
through the use of electronic and IT systems that further automate production

Fourth Industrial Revolution
through the use of cyber-physical systems

Scalable Efficiency – Doing things right

Empowering People

Scalable adaptability – Doing the right thing

www.forum.rice.edu
Industry 4.0 – Context

Population increase of 2.5Bn by 2050

Demand/competition for resources and infrastructure

1000 new structures/buildings required every day

Construction spend required $3.3T; currently $2.5T

STEM graduates continue to decline year on year

Engineering and technical services commoditized

Increased automation is critical to meeting these needs

Impacts all major industries undertaking capital projects

www.forum.rice.edu
The EPC Industry Landscape in 2018

- Technology used to replicate legacy work processes
- Still document centric (Contractors/Client/Regulatory)
- Limited generative design — automated rules based
- Mass labor still the key to increased output
- Traditional technology vendors not motivated to innovate
- Collaboration & workshare remains challenging
- Limited leverage of other industries best practices
- Construction techniques lag advances in materials

www.forum.rice.edu
Q: What does Digital Transformation mean?
“Waiting on – E&C Digital Transformation”

**Question:** What is the status of transformation in your organization

a) Transformed  
b) In transformation now  
c) Just started the process  
d) Have not started  
e) Do not want to transform/what transformation?

[www.forum.rice.edu](http://www.forum.rice.edu)
Q: Are organizations in this industry able to change behavior?
**Question:** Is your organization able to change behavior?

a) Yes, but contractors are not

b) Yes, but clients are not

c) Yes, but contractors should pay for innovation

d) Yes, but clients should pay for innovation

e) Yes, but no one is willing to pay for innovation
Q: Before getting into the cost discussion, is the business problem defined? What are we trying to solve?
Q: Where are the clients or the contractors failing at the transformation?
“Waiting on – E&C Digital Transformation”

**Question:** Where do you think the biggest impact on digitization is?

a) Engineering innovation  
b) Construction Innovation  
c) Procurement innovation 
d) Project handover  
e) No impact, we are digital
Q: Where do we think we can make the biggest impact on digitization?
Q: How do you go about funding digitization journey?
Question: What are barriers for realizing value of digital transformation?

a. Focus on technology, rather than business problem
b. Ability to change
c. Don’t consider cost of implementation
d. Ongoing cost of solution
Q: How do I get started? What are some steps to create a successful program? How to take on a digitalization program?
Waiting on – E&C Digital Transformation”

• Takeaways:
  ○ Break the cycle of industry
  ○ We have collectively commoditized the industry, we need innovation
  ○ There is a C level focus on innovation in our industry that should enable us to drive some innovation into industry
  ○ Breakaway from the workhour pricing model
  ○ You are changing people and process, not about the technology