A New Smart Tool Species

Marty Doscher, VP AEC Marketplace, Dassault Systèmes
The recent past

• “In the new digitally-driven processes of production, design and construction are no longer separate realms but are, instead, fluidly amalgamated. As observed by Toshiko Mori (2002), ‘The age of mechanical production, of linear processes and the strict division of labor, is rapidly collapsing around us.”


• Digital technology is ubiquitous.
DESIGN MIAMI: FLOTSAM & JETSAM

Designed by SHoP, Engineered by Thornton Tomasetti CORE, Made by Branch Technology with Oak Ridge National Laboratory (ORNL)
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Mass Timber: Brock Commons Tallwood House

Virtual Construction by CADMAKERS.
Virtual + Real complement and amplify one another
System Engineering

- Closing the gap between designed and actual performance
  - Requires a new approach based upon models which persist across the built environment lifecycle, with simulations during design, which later integrate control systems during building operation.
- Michael Wetter, Lawrence Berkeley National Laboratory, Simulation Research Group.
Plan
Design/Engineer
Make
Operate/Maintain
Use

The Building, Processes and Tools of tomorrow pertain to Cyber-Physical Systems and Smart Cities.
Highlights of the disruption

• Refocusing value from design and delivery towards use.

• Tech natives are now in executive management positions (in tech and non-tech focused roles)

• Investment in innovation- VC’s including AECO firms invest over $1B in 2018 in Proptech (including Real Estate tech and Construction tech). Examples WeWork, Katerra. Assuming avg 3X returns, value of companies funded by VC’s by now will be >$12B in 10yrs.
Technology Trends: Platform Services

- Mobile
- Cloud
- Robots
- Service Architecture
- Data Centric
- Big Data / Data Analytics
- VR/AR
- Cyber-System Experiences
[Digital] Workplace Experience

• designing for connected flexible workspaces and workers
• preparing for/the workforce of the future

Experiential Learning

Experiential learning, David A Kolb, 1981
teaching is the process whereby knowledge is created through the transformation of experience
Value Networks

• In response to the demand to be more responsive and flexible to the needs of the customer, while reducing working capital to do so, Value Networks replace linear/fixed supply chains.

• With customers at the center of the network, the interdependent actors work together to deliver the highest value to the customer. They adopt new dynamic business processes, and adapt the right level of transparency with their collaborators while safeguarding their sensitive IP, and measure their performance in terms of the overall performance of the network to meet the customer demands.

• A platform connecting people, processes and data affords seamless collaboration and delivery of value to the customer.

• Network effects- demand-side economies of scale wherein many customers are joined into the Value Networks contributes to higher value of the offerings of the providers. Contributes to growth and profitability to those providers.

• Some disruptors make new value networks to tap into new users with new user-focused offers.
Takeaways

• The current generation of Smart Tools:
  – automate the capture and reuse of your knowledge through virtual-real experiences
  – connect and integrate many disciplines across the entire lifecycle to help you grow your business through value networks
Thank You!

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