



Re-envisioning Construction Through Industrialized and Robotic Construction



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ABSTRACT

The construction industry is on the cusp of a sweeping change. The anticipated shortfall in workforce, coupled with fragmented industry processes, leave significant gaps in the cost effectiveness and timeliness of construction. This presentation will introduce the transformational change that is coming in the form of industrialized and robotic construction. Dr. Leicht's research into the application of robots for in situ construction sites will present the developing framework for considering the uses of robots, and the enabling processes and technology for their effective implementation. Dr. Leicht's research delves into re-thinking the fundamental way in which we approach the means and methods of construction tasks in light of the emerging capabilities and technologies that robots offer. Through highlighted cases of applications, he will share insights regarding the changes needed in the constraints, planning, and conditions for employing robots into construction activities, and the emerging trends that are both helping and hindering the more widespread adoption of robotics.

BIOGRAPHY

Robert M. Leicht is an associate professor and graduate of the Department of Architectural Engineering at the Pennsylvania State University. He is the Director of the Partnership for Achieving Construction Excellence (PACE) at Penn State. Dr. Leicht is the lead faculty for the construction capstone course; he leads the construction-engineering course dedicated to Mechanical and Electrical system construction. He also teaches graduate level courses in project delivery systems and lean production management. To support his research into integrated approaches to construction, Dr. Leicht uses theories from organizational science, communication, and information modeling, in addition to lean. His research delves into methods and technologies that improve construction processes through understanding the underlying systems, processes, and information needs to improve the delivery of capital projects. He was a project lead in the recently funded CII project on Smart Model-centric Life Cycle Approach to Collaborative Execution of Capital Projects, focused on enhancing the use of data throughout construction organizations and projects. He was an investigator for the BIM Guide for Owners, which builds upon the widely adopted Penn State CIC BIM Execution Planning Guide. His current work focuses on the how industrialization and the adoption of automation and robotics will transform construction.