Starchitects and Jack-Hammers: Requirements Engineering Challenges and Practices in the Construction Industry (Keynote)

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ABSTRACT

Our built environment is a marvel of engineering. It is the continuously evolving product of collaboration between civil engineers, mechanical engineers, electrical engineers, architects, owners, governments, voters, contractors and more. Many of the requirements-related challenges that are commonly encountered in the engineering of software systems have been around for centuries in the construction industry.

This keynote seeks to describe those requirements engineering problems that are intrinsic to the development of complex twenty-first century buildings and to explain the practices that have evolved to address them. It will highlight those requirements-related challenges that the construction industry is still grappling with and some new challenges that are emerging. The keynote will be illustrated with examples of complex building projects from Arup. The objective is to explore the potential synergies and the possible transfer of practical ideas between some of the oldest engineering disciplines and one of the youngest.

ABOUT THE SPEAKER

Fiona Cousins is a Principal in the New York office of Arup and a Board Member for the Americas. Arup is a global multidisciplinary design, engineering and consulting firm, with over 10,000 employees, and is the creative force at the heart of many of the world’s most prominent projects in the built environment industry. Fiona is the leader of the New York sustainability team for Arup and one of the leaders of the mechanical engineering team. She served for 10 years with the New York Chapter of the U.S. Green Building Council, has been honored as chair emerita, and has been elected to the National Board.

Fiona’s enthusiasm for low energy design and the thermal performance of buildings has driven her work throughout her career, and has led to a passion for fully integrated design solutions, where each discipline plays a part in developing the project. She has had the opportunity to apply this approach in her recent work, which includes a number of complex laboratory and gallery projects for which she was project director. Selected projects include the Princeton Chemistry Laboratory, the High Museum of Art Expansion and Lingotto Bolla. For the past ten years, Fiona has also organized and run the Arup Design School – an internal training weekend at which junior engineers and consultants investigate creativity, client relationships and interdisciplinary working through a series of hands-on exercises.

Fiona graduated from the University of Cambridge with degrees in Engineering Science and Interdisciplinary Design for the Built Environment. She is a Professional Engineer (PE) and a LEED Accredited Professional (LEED AP). Fiona has held positions as a guest lecturer or associate adjunct professor at the Universities of Columbia, Yale, Cornell and Virginia. Fiona is a frequent presenter on low carbon solutions and a co-author of the book Two Degrees: The Built Environment and Our Changing Climate.