

## IAS / Department of Computer Science Joint Lecture

# Hong Kong as a Smart City

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**Date : 6 July 2016 (Wednesday)**

**Time : 4:00pm - 5:30pm**

**Venue: Mr & Mrs Ho Chun Hung Lecture Theatre (LT-12),  
4/F, Academic 1 (AC1), City University of Hong Kong**



### Abstract

What will make Hong Kong a smart and comfortable city to live in? We need smart and clean water, energy, environment, food, information, and transportation. These comfort should be provided at low cost with convenience and mobility. I want to replace the Thomas Edison model of centralized generation and grid distribution of electricity to homes and business. This model is wasteful, generating much of the carbon dioxide that causes global warming. The new model is personal energy, with local collection, conversion, storage, and use of energy by mobile individuals. To this end, I have invented the Firefly technologies, generating Combined Cooling, Heating, Power, Pressure, Work, and Water (CCHP2W2). We use clean concentrated solar power backed up by gas combustion with energy storage of dried and pressurized air. The technology is based on the Brayton heat engine and heat pump, using my patented turbine and compressor. The Firefly technology is smart, small, scalable, strong, silent, safe, saves, stores, and stylish. This invention was inspired by necessities. First, I wanted to solar charge my electric Tesla Roadster. I invented a high efficiency turbine, providing also heat and chill. I am building a super car using my turbine and electric motor, using super-capacitors instead of batteries. Second, I want to change how air conditioning is done in Hong Kong, removing humidity by compression and creating chill by expansion of air without use of harmful refrigerants. Humidity removed produces water for human consumption and food production. I will outline my dream of the Kai Tak Fantasy, a smart city model for a Smart Hong Kong. I will outline how Hong Kong can provide personalized comfort for water, energy, environment, food, information, and transportation. I also want to make Hong Kong the center of an energy revolution, returning Hong Kong to her root of manufacturing through innovation and automation.

### Biography

Professor Joseph Y. Hui obtained his BS'81, MS'81, and PhD'83 degrees all at MIT in a total of 6 years. His PhD thesis titled Fundamental Issues of Multiple Accessing provided the theoretical foundation of wireless communication, including GSM, CDMA, and UWB, with his first patent covering the essential technology of GSM. He joined Bell Labs, Murray Hill. There, he wrote the seminal book "Switching and Traffic Theory for Integrated Broadband Networks" based on his lectures at Columbia University, where he taught as adjunct professor and was appointed full professor in 1999. He declined that offer to join Arizona State University as director for the Telecom Research Center where he pioneered cloud computing and virtualization for which he has more than 10 patents. Since 2010, he focuses on energy research and has filed more than 10 we-fit patents. Since 2014, he became Professor Emeritus at ASU to pursue his career as Solar Man and CEO of Monarch Power Corp. He wrote the encyclopedic book "What the Matter with Energy" to teach young people the basics of energy physics and engineering. Professor Hui is a Fellow of IEEE, HKIE, and a Presidential Young Investigator awarded by President G.H. Bush. He received the IEEE Charles Bennett Prize Paper Award. His passion is to help people all over the world live a comfortable yet sustainable life. He is passionate about social and climate justice for the poorest of the world and wants to bring in the fourth industrial revolution, particularly for the poor countries.

**All are welcome**

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