Abstract:

Sustainability issues such as natural resource depletion, pollution, and poor working conditions are complex and have no geographical boundaries in our interconnected world. They are also "wicked problems" as there is no single authority over these issues, 'human' systems are the cause of them and 'humans' have to solve them and there is a temporal discounting of present for the sake of future. To address these issues requires a paradigm shift to think beyond a bounded, linear model understanding towards a broader systems framework. For this reason, we introduce a sustainable system-of-systems (SSoS) concept that integrates systems approach and sustainability and ecological science concepts e.g. nested hierarchy of systems, parent-child-sibling systems, emergent properties from system interaction within the same level and between levels, the convergence of multiple goals into the triple bottom line goal, and the hierarchical time dimension. The complex adaptive cycles where lower level systems 'revolt' higher level systems and higher level systems 'remember' lower level systems will be used in this concept. An example of the application of SSoS concept for designing green building will be given. The implication is that a sustainable world requires a broader systems thinking than that which currently exists in human factors/engineering/social science. This study proposes a sustainable SSoS concept that can be used for addressing sustainability issues and designing systems for sustainability e.g. mitigation and adaptation design.

Biography:

Paul H.P. Yeow, Associate Professor, Monash University Malaysia, has 20 years’ experience in the fields of human factors, information systems, quality and operations management, and marketing. He was a research scholar from ISEM, National University of Singapore. Paul’s research interests include Human Factors in Sustainable Production, Smart Factory
Technology, Workstation Design, Tool Design, Safety Design, Safety Program, Technology Acceptance, and Responsible/Sustainable Consumption. He has published seven Q1 journal articles (JCR) in the last 4 years (2013-2016) and a total of more than 50 articles in journals such as Applied Ergonomics, Ergonomics, International Journal of Industrial Ergonomics, Ergonomics in Design, Safety Science, Meat Science, Government Information Quarterly, Electronic Commerce Research and Marketing Intelligence and Planning. His research has been cited more than 1,200 times with a H-Index of 18. He is currently working on several research projects including the smart vest design for sustainable work with Royal Institute of Technology (KTH) and Karolinska Institute; the SSoS concept with a group of researchers in Human Factors and Sustainable Development (HFSD) committee under International Ergonomics Association; and sustainable computer consumption study in Malaysia. He has published a special issue in Applied Ergonomics in 2016 and completed the final draft of an edited book which will be published in January, 2018 on the SSoS concept. He received 14 research and invention awards, including the prestigious Monash University’s Pro-Vice Chancellor (PVC) Research Awards, Gold Medal in the Belgian and International Trade Fair for Technological Innovation, Gold Award and Best Invention Awards in International Invention, Innovation & Technology Exhibition (2008), and Research Excellence Award, Faculty of Business and Law, Multimedia University. He has completed 15 national and internal research grants including the Fundamental Research Grant Scheme (FRGS) and E-Science grants. He has graduated 5 PhD and 3 MPhil students as the main supervisor. He has held the post of guest editor and member of editorial board of one of the top human factor journals, i.e. Applied Ergonomics (Q1). He has held major leadership posts such as Head of Discipline, Head of Human Factor Research Centre, and Head of Service Embodied Technology and Application Research Program. Paul is currently in the panel of evaluators for top Malaysia’s national grants such as the FRGS, the Prototype Research Grant Scheme and the Newton Researcher Link – Academy of Sciences Malaysia.