

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: <https://cde.nus.edu.sg/ece>

Area: Power and Energy Systems (PES)

Host: Assoc Prof Jimmy Chih-Hsien Peng

TOPIC	:	An Exploratory Approach to Planning and Operation of Whole Electrical System
SPEAKER	:	Prof Jovica Milanović Professor, Electrical Power Engineering, The University of Manchester
DATE	:	Monday, 24 August 2026
TIME	:	3:00PM-4:00PM
VENUE	:	E7-03-09

ABSTRACT

Power utilities must improve planning and operation of integrated distribution and transmission networks (D&TN) to meet environmental targets affordably, amid workforce shortages and delays in procuring the tools needed for observability, controllability, regulatory evidence, and innovation.

Traditional D&TN simulations treat distribution networks (DN) as passive, using static load models even in dynamic studies. Modern Active Distribution Networks (ADNs), with embedded generation and storage, enable bidirectional power flow and dynamic D&TN interactions. Today, transmission and distribution networks are still modelled and operated separately on different software and datasets, though data-exchange standardisation efforts are growing. Digital twins offer a promising route to managing integrated power systems securely and efficiently, but major technical and operational hurdles remain before widespread adoption.

The approach in this presentation, once developed, could significantly reshape planning and operation of integrated systems—beyond just electricity—accelerating a faster, more reliable, secure, resilient, and affordable transition to net-zero power networks. It aims to ensure secure, stable, and economic operation of integrated energy systems (IES) while avoiding excessive data exchange (limited by data volumes, latency, security, and standardisation gaps) and the high computational, modelling, infrastructure, human resource, and security costs typical of purely data-driven digital twin approaches.

BIOGRAPHY

Jovica V. Milanović received Dipl.Ing. and M.Sc. degrees from the University of Belgrade, Yugoslavia, a Ph.D. from the University of Newcastle, Australia, and a D.Sc. from the University of Manchester, UK. Before joining Manchester in 1998, he worked at "Energoprojekt" Engineering and Consulting Co. and the University of Belgrade, as well as the Universities of Newcastle and Tasmania in Australia. He is immediate past Head of the Department of Electrical and Electronic Engineering at the University of Manchester, Visiting Professor at the Universities of Novi Sad and Belgrade, Serbia, Honorary Professor at the University of Queensland, Australia, and Distinguished Visiting Professor at Tsinghua University, China.

Professor Milanović chaired 6 international conferences, served on 9 IEEE/CIGRE/CIPRED working groups (convening 3), and led research projects worth over £86 million. He has published over 650 papers and reports, delivered 40+ keynotes, and presented 200+ courses/tutorials (65 courses, 113.5 days) worldwide. He consults for organisations including Rolls-Royce Plc's Executive Advisory Board (Energy: Electrical, Control Systems & Electronics), Electricity North West's Customer Engagement Group, the Independent Net Zero Advisory Council, Scottish Power Energy Networks' DSO Panel, the "Nikola Tesla" Institute (Belgrade), Montenegrin Electric Enterprise AD Niksic (non-executive Director), and Sichuan Energy Internet Research Institute, China.

He is a Fellow of the Royal Academy of Engineering (UK), Foreign Member of the Serbian Academy of Engineering Sciences, Fellow of the IEEE and IET, Chartered Engineer (UK), and Distinguished IEEE PES Lecturer. His IEEE PES roles include Governing Board, Executive Board and Financial Committee membership, Long Range Planning Committee, and Vice President–Publications. He previously served as Regional Representative (Europe, Middle East & Africa) on the PES Governing Board, vice-chair of the Fellows Evaluation Committee, Chair of the Herman Halperin Transmission and Distribution Award Committee, member of the IEEE Fellows Committee, and immediate past Editor-in-Chief of IEEE Transactions on Power Systems.

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