

TRACK 2: UAV**“REQUIRED COMMUNICATIONS PERFORMANCE FOR URBAN UAS OPERATIONS”**

BY
MR ZI HUANG
NOVA SYSTEMS ASIA

ABSTRACT

The rapid acceleration of UAS operations in aerial inspection and delivery has been apparent over the past decade, mostly driven by the commercial industry with aims to increase efficiency and productivity by substituting traditional ground-based operations with cost-effective UAS operations. In metropolitan environments such as Singapore, low altitude UAS operations presents many challenges in maintaining Command and Non-Payload Communications (CNPC) between the aircraft and the Ground Control Station (GCS), particularly as operations extend from Visual Line of Sight (VLOS) to Beyond Visual Line of Sight (BVLOS) operations where direct Radio Frequency (RF) CNPC degradation and LOS obstruction become significant.

Cellular network technologies like LTE presents an opportunity to explore BVLOS operations in metropolitan areas that can benefit from efficient delivery operations via UAS and Urban Air Mobility (UAM) operations. However, current LTE networks are only optimized for terrestrial users as LTE transceivers are typically positioned such that coverage and performance is maximized on the ground level. The suitability of LTE for UAS operations must be investigated to advance the uptake of effective and safe urban UAS operations in Singapore. To support this, Nova Systems has recently completed a suite of flight trials focused on assessing the suitability of local LTE networks to address some of the key challenges presented by urban UAS operations.

BIOGRAPHY OF SPEAKER

Graduated from the University of Queensland in 2017 with a Dual Major in Mechanical and Aerospace Engineering, Zi is currently a Project Manager at Nova Systems where he leads the technical team in Singapore responsible for the development of a UAS flight deconfliction and management system as part of an international UTM R&D consortium co-funded by the Civil Aviation Authority of Singapore (CAAS). Previously, Zi was a Systems Engineer in Nova Systems Australia where he gained extensive T&E experience working within the Defence Aerospace sector on the Airbus MRH90.