

# Avatar Mobility Management in Delivering Mobile Immersive Communication Environment

Ying Peng Que, Farzad Safaei, Paul Boustead,  
Smart Internet CRC,  
Telecommunications and Information Technology Research Institute,  
University of Wollongong, Australia  
Email {ying, farzad, paul}@[titr.uow.edu.au](mailto:titr.uow.edu.au)

## *Abstract*

*In our previous work, we proposed a distributed server architecture to deliver multi-party immersive voice communication service to mobile clients accessing a Distributed Virtual Environment (DVE). We refer to such immersive voice communication service for mobile clients as Mobile Immersive Communication Environment (MICE). In this work, we study the impact of virtual world avatar mobility on the distributed server assignments for MICE in terms of the delay deviations and bandwidth costs incurred. The simulation results show that as the update frequency decreases from the benchmark case of 1 Hz, both delay deviations and bandwidth costs increase. Such deteriorations of delay and bandwidth costs are more significant at the low avatar densities than the higher avatar densities. However, the optimal server assignment model is too computationally complex to be executed at a reasonable frequency. A much faster greedy heuristics has been devised to perform server assignment at the required update frequencies.*