Announcing the Final Examination of Kiyoul Kim for the degree of Doctor of Philosophy

Time & Location: April 10, 2015 at 10:00 AM in ENG2 312L
Title: Design of A Framework to Measure the Degree of Live Virtual Constructive (LVC) Simulation Interoperability

Accomplishment of the LVC Simulation interoperability has been a major goal and a challenge in the Modeling and Simulation (M&S) community. There have been efforts to interoperate individual Live, Virtual and Constructive simulations within a common synthetic environment through suitable technologies such as interface specifications, protocols, and standard middleware architectures. However, achieving interoperability of LVC Simulation is a technologically complex task, being affected by multiple factors, and the characteristics are not yet satisfactorily defined and studied. A proper method is absent to measure the potential interoperability degree of LVC Simulation. Therefore, there should be an appropriate systematic approach to measure the potential LVC Simulation interoperability in Systems Engineering (SE) perspective which includes technical, conceptual and managerial domains. This research aims to design a preliminary systematic approach to measure the potential interoperability degree of an individual Live, Virtual and Constructive simulation and a relevant organization which plans to use the simulation system for simulation interoperability. Specifically, a framework that contains components such as a) LVC Simulation interoperability domains, b) interoperability domain factors, c) interoperability maturity levels, d) interoperability determination method is proposed. To accomplish the goal, a set of factors that determine the interoperability degree in LVC simulation environment are identified, and the factors are used to build the key elements of the framework. The proposed methodology for the framework design is based on systematic literature reviews and a survey involving a number of relevant domain experts. A case study is demonstrated to prove the validity and effectiveness of the developed framework. The case study illustrates how the interoperability levels of a simulation system and a relevant organization are effectively measured. This research potentially contributes by providing an understanding of the factors that determine the interoperability degree of LVC Simulation, improvement of the LVC Simulation interoperability assessment process, and consequently, accomplishment of more effective LVC Simulation interoperability.

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Approved for distribution by Gene H. Lee, Committee Chair, on February 24, 2015.

The public is welcome to attend.