

SBIR 06.2 PHASE I - AWARD DETAILS	
ORGANIZATION	CERDEC
TOPIC NUMBER	A06-100
CONTRACT NUMBER	
YEAR OF AWARD	
AWARD START DATE	
AWARD COMPLETION DATE	
PROPOSAL NUMBER	A062-100-2241
TITLE	Reactive, Multi-Layer Simulation Technologies
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KEYWORDS	Cross layer signaling, system of systems tool, layer state machine, layer abstraction, concurrent and parallel simulation, rare event simulation.
ABSTRACT	<p>This study develops a detailed architecture of the umbrella System of Systems (SoS) tool. The tool preserves cross layer signaling and layer state machine transition regardless of whether the layer is abstracted or detailed. The proposed study will perform tasks including:</p> <ul style="list-style-type: none"> o Investigating the interaction between the specialized tools and the umbrella tool o Evaluating cross layer signaling that needs to be preserved o Defining the state-machines for each layer o Validating the cross layer signaling preservation and layer abstraction accuracy o Defining the metrics for each layer and the end-to-end metrics. <p>Concurrent and parallel simulation concepts will be studied through the framework defined above. Evaluation of rare event simulation concepts and how they fit with cross layer signaling approach will also be investigated in the Phase I. The results of the study will be a tool that can answer what-if questions concerning communications networks in a fast and reliable matter. VoIP applications, which are known to sometimes give poor performance over tactical networks, will benefit from building the proposed capabilities. The proposed tool will provide the ways to improve the performance of such applications with low cost.</p>
BENEFITS	<p>The proposed platform with cross layer signaling preserved to the application layer will make it possible in both the commercial and tactical world to develop applications that are cross layer signaling aware as well as defining the necessary layered signaling to enhance the performance of these applications. The fact that it extends from simulation to planning capabilities as well as offer capabilities for protocol layer development and application development in the existence of cross layer signaling opens a large market for commercialization.</p>