

# SSEI Research Task Summary – T19

Task Number: SSEI/T19

Lead Delivery Organisation : University of York

Project Title : Dynamic Operational Risk Assessment for NEC Systems of Systems

Research Theme : *Developing Dependable Systems*

Version : 2



## Objective of Work (why are we doing it ?)

The current drive towards Network-Enabled Capability in theatre is increasing the complexity of battlefield networks and the volume of live data available to commanders. There is a risk that this both reduces the commander's ability to understand the state of his forces in the field while at the same time providing him with huge volumes of mission data. Network-related issues such as data corruption, and source-sender ambiguity may increase risk to missions, equipment and personnel.

This task aims to provide a suite of tools to enable the commander to process the complex volume of risk-related data during operation, by producing a 'live' safety case to enable the commander to gain a full understanding of the 'risk picture' in dynamic battlefield situations.

## Nature of Work (what is it?)

Conventional safety cases present a static view of system safety, which cannot support commanders in making tradeoffs between performance and safety in real time. Many current approaches to the safety of military systems are 'accident-focussed', and pay little attention to the risks caused by hostile action.

This work will build on previous work on simulation-based hazard analysis for systems of systems and recent research on human cognition and communication to develop a suite of tools to enable rapid hazard identification, hazard analysis and risk assessment during operations. A dependability model for the underlying network infrastructure will be developed, along with an approach for the establishment of a generic safety assurance argument for infrastructure in general, distinct from a specific context-of-use.

## Outcomes (what will it produce/has it produced ?)

This task will have three outcomes:

- Development of a risk-modelling approach which can be applied across a system of systems in real time
- Establishment of an approach to assurance of infrastructure
- Prototype software tools for dynamic operational risk assessment, validated by case study and practitioner review

Timescales 36 month task, December 2009 to November 2012

Partners

Related Work

Task Lead

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