

EVALUATING THE SURVIVABILITY OF NETWORKED COMBAT SYSTEMS

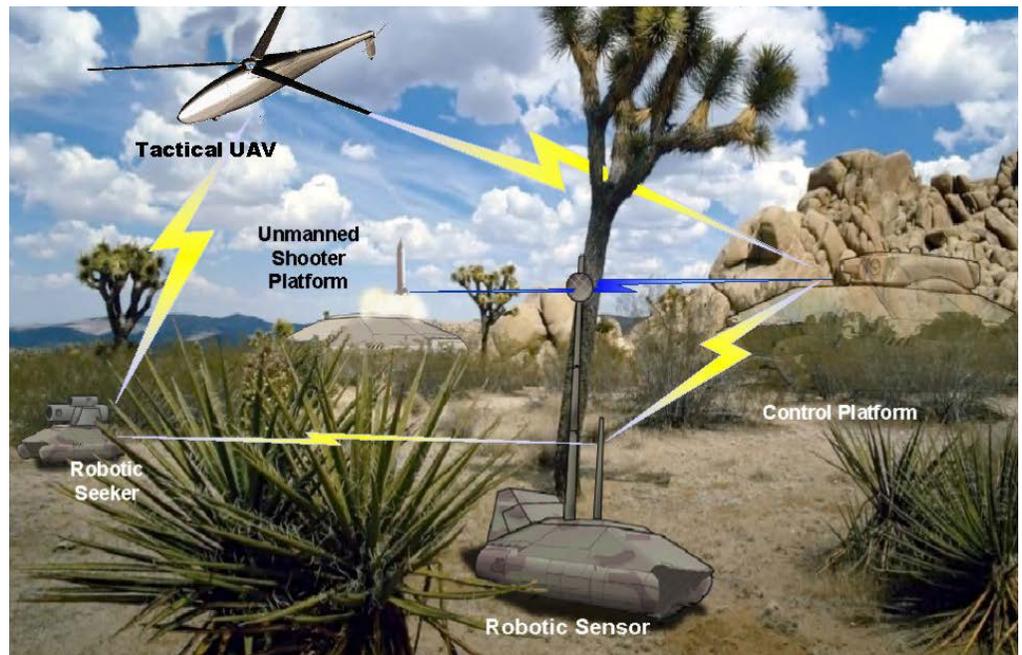
WHY MUST NETWORKED SYSTEMS BE ANALYZED DIFFERENTLY?

While systems survivability has historically been a platform-centric attribute, with the increasing reliance on information and connectivity, systems also depend on network attributes for their survivability. The ability to determine the contribution of the network to the survivability (and/or effectiveness, lethality, and sustainment) of individual platforms is critical for analysis of current and future combat systems. *The analysis of networked combat systems is only possible in a mission context.* Therefore, a new analytical method is required for evaluating networked combat system survivability and effectiveness.

Other major characteristics of networked systems also necessitate a new analytical method for evaluating their survivability. First, these systems are based on distributed tasking, where the loss of a particular function may not be critical to the mission because that function may be available to the platform from another source on the network. Second, distributed tasking may also cause performance degradations in platforms not directly affected by enemy actions. Such degradations are not accounted for in conventional roll-ups of individual platform vulnerabilities.

THE SOLUTION

The analytical method developed by the SURVICE Engineering Company addresses the particular needs of evaluating the survivability of a networked combat system. It uses the concept of dynamic fault trees to represent the network as it changes to adapt to conditions.



The method incorporates connectivity as a component in platforms (or soldiers) and provides the means to evaluate various technologies in the context of the network.

Because the method can be used with various force-level simulations, it makes the mission context an integral part of survivability and effectiveness analyses. And it is possible to employ this methodology at all stages of a system's development, from concept through life-cycle modifications.

THE BENEFITS

The method for evaluating the survivability of networked systems offers the following advantages:

- Overcomes inconsistencies in conventional platform-centric methods.
- Allows for the determination of the contribution of the network to platform lethality and survivability.
- Provides the means to combine platform vulnerabilities into an ensemble vulnerability.
- Permits comparative evaluation of survivability technologies in a mission context.
- Applies equally well to lethality and sustainment problem.