

Higher Level Fusion: Challenges and Approaches

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The purpose of higher level fusion (situation and threat assessment) is to infer and approximate the critical characteristics of the dynamic environment in relation to the particular goals, capabilities, and policies of decision makers. The result of higher level fusion is a coherent composite picture of the current situation along with prediction of threat. This situational picture provides decision makers with essential information to help them to understand and respond to the situation, and to make timely and effective decisions to mitigate its impact.

The higher level fusion process utilizes fused data on single objects of interest, databases, maps, domain knowledge, and results of domain-specific simulations and models. This process comprises several steps such as quality control of incoming data and interim processing results, temporal and spatial correlation of situation items, dynamic generation of hypotheses about current and predicted states of the environment and evaluation of their plausibility via reasoning about situational items at different levels of granularity, relationships between them, and their behavior within a specific context.

This presentation discusses the steps of this process, the challenges they present, and possible solutions.