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Systemic approach to performance prediction and the exploitation of environmental information in naval systems

Patrick Grenard
DGA/DET/CTSN, BP28, 83800 Toulon Armées, France

Interoperability of systems and implementation of network enabled capabilities are at the heart of Defense transformation. By providing extensive capabilities for data gathering, processing and presentations, they achieve a greater tactical advantage through superior knowledge of and use of the operational environment.
Within the framework of the deployment of the new French Navy information system SIC21, a system of systems is being developed in order to support the implementation of the NATO concept of Recognized Environmental Picture (REP).
The metasystem established allows for the assimilation of Rapid Environmental Assessment (REA) data, and for a local or remote production of the REP. In order to support decision making and to guide actions local exploitation of the REP is carried out through embedded tactical decision aids. They rely on advanced performance prediction tools including propagation modelling capabilities called in simulation scenarios.
The aims of the implemented models are to predict performances at the appropriate level of granularity, to provide a confidence level on the proposed tactical picture, to define the appropriate level of marine environmental knowledge that should be acquired, to optimise sensor settings, and finally to provide inversion tools for the REA, ensuring consistency with forward modelling used in performance prediction.