



Research School for Operations
Management and Logistics

Integrated Planning of Asset Use, Maintenance and Resources for a Fleet of Maritime Assets

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We consider a fleet of maritime assets that need to operate according to an operating schedule against the lowest possible cost of ownership. Specifically, there are three planning problems that affect each other: Operations Planning, Maintenance Planning and Resource Planning. The goal of this research is to develop algorithms to create improved policies on asset use, maintenance and resource planning in order to synchronize these three planning problems. The scope of the study covers three key research topics based on the nature of the information flow and the type of the considered maintenance policy. In the first topic, we consider a usage-based maintenance strategy and a given set of operational requirements that need to be met by a fleet of assets under a static information flow. In the second topic, we extend the first one to the case where new information arrives dynamically. In the third topic, we further consider condition-based maintenance in the context of integrated planning. Initially we will exclude stochasticity and focus on deterministic optimization. Subsequently, we will address the stochastic nature of the problem.