# Improved Models to Integrated Berth Allocation-Quay Crane Assignment Problem: A Computational Comparison and Novel Solution Approaches - DTU Orbit (09/11/2017)

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Nowadays, over 60% of the world's deep-sea cargo is being placed in containers and transported by ship via container terminals and seaports. Hence, the need for optimization in container terminal operations has become more and more important in recent years. The productivity of container terminals heavily relies on the efficiency of quay cranes operations, and the usage of the berthing area. Optimizing the allocation of ships to berth and the related assignment of cranes are important problems that are mostly covered as two separate cases in the literature. However, since the handling time of the vessels primarily depends on the number of containers to be handled and the number of cranes deployed, it would be beneficial to consider the integration of those two problems. This work extends the state-of-the-art by strengthening the current best mathematical formulation. Computational experiments are carried out to analyze the performance of the new formulation with respect to solution quality and execution time.

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