



## Society of Naval Architects and Marine Engineers 2009 Annual Meeting and Expo

**Title:** Two Approaches to Scheduling Outfitting Processes In Shipbuilding

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**Abstract:** The outfitting process is characterized by interferences between yard and many subcontractors, disturbances by delays, and technological constraints concerning the installation of main propulsion machinery. Currently the outfitting processes are usually not scheduled in detail by the yards and they rely heavily on the experience of the personnel of the yard and subcontractors. The presentation will look demonstrate the possibilities to automatically generate an outfitting sequence and planning, based on two approaches. The first approach is an analytical approach, where the focus lies on the most convenient installation sequence on a system or compartment level. This sequence considers all relations between activities within one system and with activities of other systems, and relations within one compartment and its adjacent compartments. Then a mathematical approach is discussed. After the introduction of hard and soft precedence constraints in the installation process, methods and algorithms are presented with the purpose of encoding these constraints quantitatively. An assembly sequence generation model is established to generate an installation sequence of these components in one compartment. After these short introductions, the highlight of the presentation would be to demonstrate how these two approaches supplement each other and together are will be able to provide support for all phases of the construction process.

**Keywords:**