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16. Abstract Due to the fast growing rate of the global container trade, every major port is under the pressure of meeting the projected capacity demand. The scarcity of land at ports in many Metropolitan areas makes it difficult if at all possible to improve capacity by expanding the terminal area. As a result alternative solutions have been sought for improving capacity and meeting the growing demand for container storage area and terminal capacity.			

In this study we propose a new concept called "Automated Cargo Transportation system between Inland POrt and Terminals" (ACTIPOT) which involves the use of automated trucks to transfer containers from an inland port to terminals. The inland port could be a few or more miles away from the terminals where lower cost land is available and is used for storing and processing import/export containers before distribution to customers or transfer to the terminal for loading on ships.

In this report, we design, analyze, simulate and evaluate the various components of the ACTIPOT system with emphasis on the lateral and longitudinal control of the automated trucks and on the overall supervisory controller that synchronizes all operations and transfer of containers between the terminal and inland port using dedicated truck lanes. We employ the use of truck platoons in order to make the control of the overall system easier to handle and understand therefore minimizing the possibility of deadlocks, congestion and failures. Simulations are used to demonstrate that each subsystem operates in a satisfactory manner. Larger scale microscopic simulations are performed to demonstrate the overall performance of the ACTIPOT system. The choice of distances and other variables in the ACTIPOT system are selected by using the ICTF facility as the inland port and Pier G as the terminal both located in the Long Beach area.

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