



# case studies

customer success stories from the paramics community

## Project

Operation Restore

## Organization

Regal Decision Systems Inc

## Sector

Simulation Modelling

## Objective

To determine the Surge Capacity of a Sea Port and its adjoining roadway network

## Highlights

- Integration

## Contact Point

Regal Decision Systems Inc  
1302, Concourse Drive  
Linthicum, MD 21090

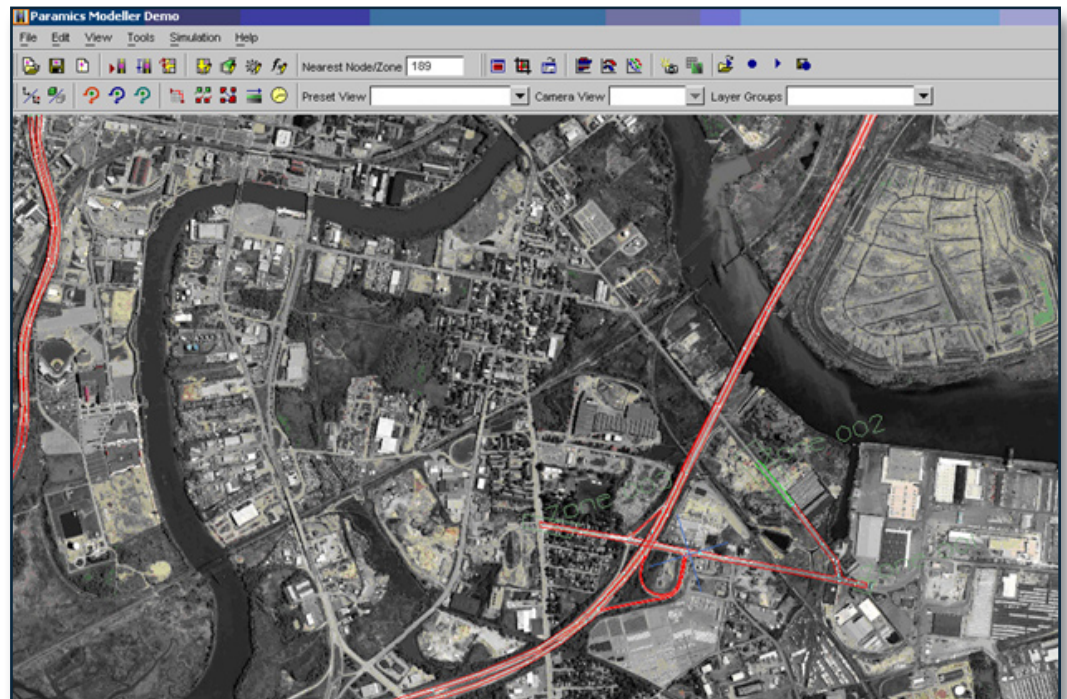
[www.regaldecision.com](http://www.regaldecision.com)



## Integrated Sea Port and Land Side Model

Regal Decisions successfully applied Paramics as part of a larger simulation effort called Operation Restore. Operation Restore provides the optimal reallocation of vessels to other seaports when the seaport they are bound to is shut down indefinitely. To evaluate the effectiveness of such a rerouting, it is essential to determine the surge capacity of the destination seaport. The number of variables that influence capacity and throughput at a seaport tends to be very large. Additionally, complicated dynamic interactions between several of these variables restricts the use of deterministic models to compute the throughput and capacity of the port.

Discrete event simulation modelling of stochastic seaport processes is a method to statistically derive expected wait times, utilization and throughput based on multiple simulation runs. Regal developed the Sea Port Capacity Model (SPCM) for this purpose and linked it dynamically to Paramics since the throughput of the port depends heavily on the throughput capacity of adjoining traffic network.



After a comparison study where demo versions of PARAMICS, AIMSUN, CORSIM and VISSIM were evaluated, Paramics was chosen because:

- Paramics provides an application programming interface (API) to control the state of certain variables and hence the simulation externally.
- Paramics has been extensively researched by the ITS department at the University of California, Irvine.
- Paramics has an easy to use GUI
- The technical support at PARAMICS is excellent.

The screen shot above shows an example seaport and the adjoining major freeways (in red). An interface dll was developed using examples provided by Paramics technical support which dynamically linked the Sea Port Capacity Model (SPCM) with Paramics. The idea is that any vehicle "leaving" the Sea Port will "enter" the Paramics traffic network and vice versa. In addition backups at the port affect traffic flow on the roadway and vice versa.