

# Manage your terminal intentionally: know the economic trade-offs

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Terminal equipment need not always be doing meaningful work. If equipment is idle, however, it should be deliberate and for the greater good of the business. To reach operating targets more easily, it is crucial to know the trade off costs of each decision.

## Consistency is king

Consistency is king, and it should come as no surprise. To quote Mark Horstman from Manager Tools LLC: “a well managed terminal may be repetitive and unsexy, but it’s profitable”. Ships and trains should not wait for long periods of time to be processed. Delays are generally very expensive; they increase shipping demurrage costs, increase the required size of train fleets, and decrease terminal throughput capacity.

Terminals can be made more consistent by first identifying the primary sources of delays using historical operating data. The most valuable documents to gather include:

- Train or truck activity logs
- Ship ‘Statements of Facts’
- Train, truck or ship cargoes by grade and tonnage
- Planned or unplanned maintenance events
- Inventory surveys

Categorized and quantified delays show where the terminal should focus its finite resources. Projects should be compared on the merits of their costs and benefits. A terminal manager may then ask: “How can I know the actual benefit of my planned improvements? My terminal has so many complex interactions.”

This is a valid concern; simple arithmetic can be dangerously inaccurate when many factors influence a terminal’s performance.

## Simulation helps

Ausenco have found dynamic simulation modeling to be a very powerful tool for terminals and supply chains of all sizes and complexities. The simulation models Ausenco develop for clients using proprietary software allow for accurate predictions of the benefits of operational improvements (see Figure 1). Testing operational improvements with a calibrated simulation model can be much more cost effective than experimenting with the real system.

All of a terminal’s major pieces of equipment are modeled individually with real life behavior that Ausenco confirm during site visits. Equipment interactions, operating restrictions, and realistic train movements are all captured.

Ausenco then calibrate the models to dozens of key performance indicators (KPIs) from at least one full year of detailed operating data. KPIs generally include all major elements of terminal performance, handling rates, and all components of ship and train times. Only after calibration do models become accurate predictors of future performance.

Once the benefits of planned operational improvements are known, terminal managers can select and implement new developments based on their value to their business.

It is important to continue to measure delays and compare them to operating targets. If delays are not kept in check, complacency can set in and inefficiencies can return. Dedication is necessary and a change in culture might be too. The prize, however, can be sustained performance improvements at little or no cost. Continuous improvement processes like Lean Six Sigma and Total Quality Management are not new, but they are effective in the right hands. Improving operations deserves serious

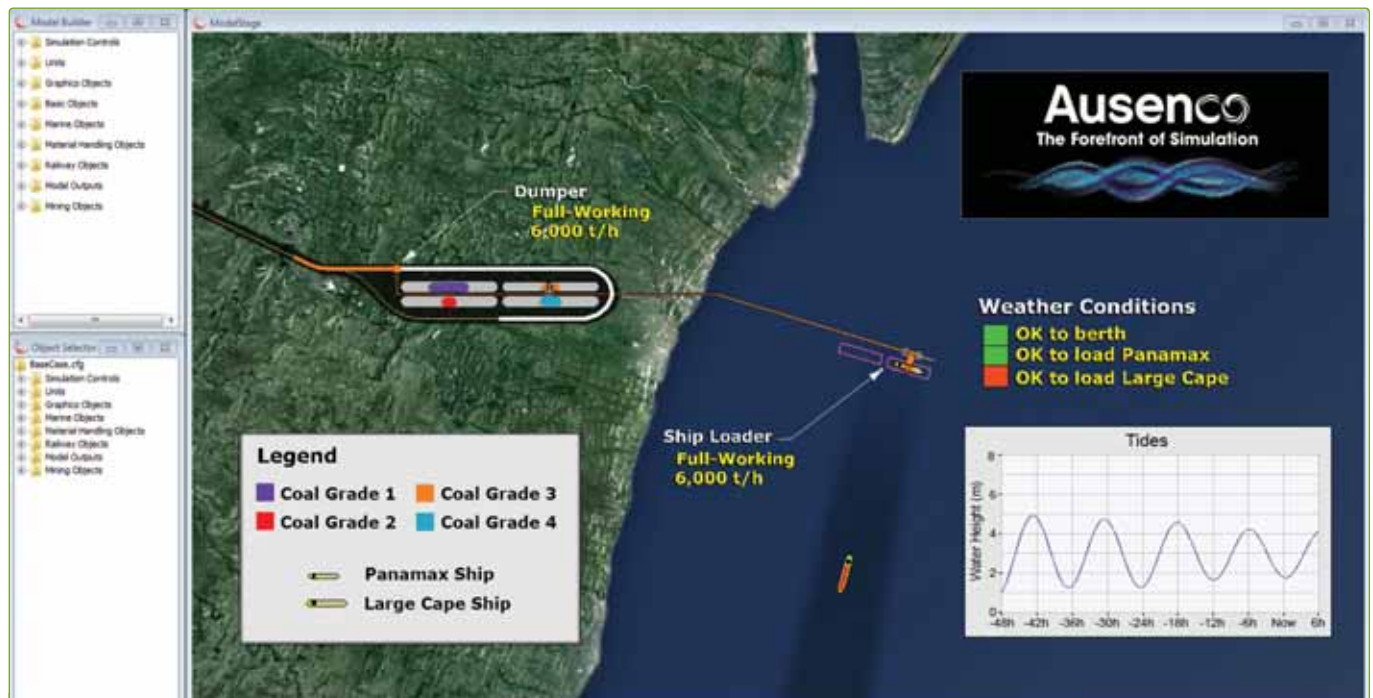


Figure 1. Screenshot of Ausenco’s proprietary simulation software.

consideration before spending inordinate amounts of money on new equipment and infrastructure.

Once existing operations have improved, new equipment may still be necessary to increase a terminal's throughput capacity and meet demand. Design and construction costs are generally significant, so it is important to test new equipment with a calibrated simulation model. This is vastly more cost effective than upgrading a terminal and crossing your fingers. With simulation, terminal managers can compare options easily and foresee future challenges.

Simulation modeling of new equipment and terminals is generally performed in parallel with the pre-feasibility and feasibility design phases. The two teams provide feedback to one another during project development and help optimize each other's results. Simulation often costs less than 5 percent of the design fees and can have greater than a 100-fold return on investment.

#### Efficiency breeds safety

Delays hindering the terminal frustrate operators and managers alike. Addressing these delays improves both morale and efficiency.

Efficiency makes operating targets easier to hit. As a result, operators will feel less rushed, will take fewer risks, and will have fewer accidents.

#### To guess is to risk

Competitors also make decisions with incomplete information. The key is to know more than them and invest more wisely.

The best investment is no investment at all; all terminals can do more with existing resources. If investment in new equipment is necessary, it is important to remember that projects that do not address a terminal's bottleneck will do little to improve throughput capacity or operating costs.

Data analysis and simulation help quantify benefits before projects are undertaken. They can offer a new perspective and identify the projects with the most value to the business.

To compete and succeed in today's economy, terminal managers must understand the economic trade-offs of their decisions and act accordingly.

#### ABOUT THE AUTHORS AND THE COMPANY

#### ENQUIRIES

**Allen Funston**, P.Eng., is a consultant with Ausenco Sandwell, specializing in industrial management and the optimization of bulk handling systems. He has studied major bulk handling terminals and supply chains worldwide, and has successfully managed a manufacturing plant in the Vancouver area.

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experience in the planning and assessment of marine terminals and marine transportation systems.

**Ausenco** provides engineering and project management services in the resources and energy sectors. Ausenco Sandwell, part of Ausenco's Process Infrastructure business line, operates worldwide in the marine, bulk handling, mining infrastructure, energy and industrial sectors.

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