

## SIMTO™ Dock Manager

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SIMTO™ Dock Manager is an integrated capability for our enterprise level planning and scheduling system. Dock Manager automatically schedules the ships, vessels at the dock. The system considers many factors which may impact the terminal operation including berth/jetty constraints, traffic congestion, weather conditions, terminal inventory, terminal send out rates, contractual limit, cargo arrival schedule and facility maintenance. SIMTO Dock Manager has the ability to visualize the future for generating a schedule for the cargos arriving at the jetty or berths.



The automatic scheduling technology addresses major activities at the dock such as:

- Automatically choose docks/berths
- Automatically assign receiving tanks
- Automatically check for constraint violations before inbound and outbound transits
- Automatically calculate delays

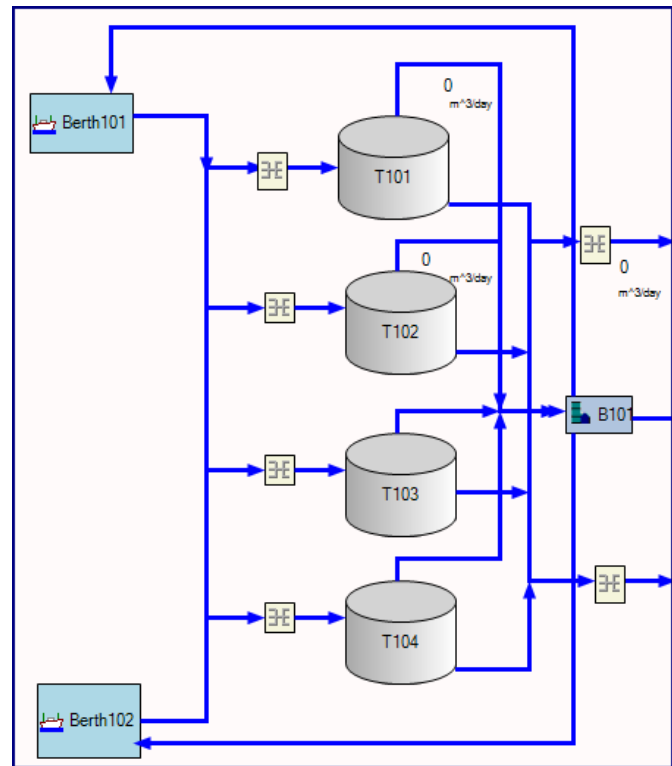
SIMTO Dock Manager facilitates inventory management and reduces costs by minimizing demurrage across feasible schedules while considering active constraints including the berth or jetty and channel traffic.

### Dock Manager Configuration

A channel object contains all the status information of the terminal that is required to determine if ship transit is feasible. Based on this status information, the dock manager will determine:

- The availability of the berth
- The next available inbound time
- The next available outbound time
- The next available unloading time

Terminal inventory of the tanks is taken into account in order to determine whether there is enough capacity to unload the incoming cargos and prevent overflows. Likewise, the terminal send out rate is checked for each tank in the terminal. Contractual limitations between the terminal ownership and the incoming vessels are checked. The cargo arrival schedule tells when the cargoes will arrive at the terminal. The terminal capacity is checked since reduced capacity can result from facility maintenance, for example if one of the berth or tank needs to be shut down for maintenance.



## Berth Scheduling:

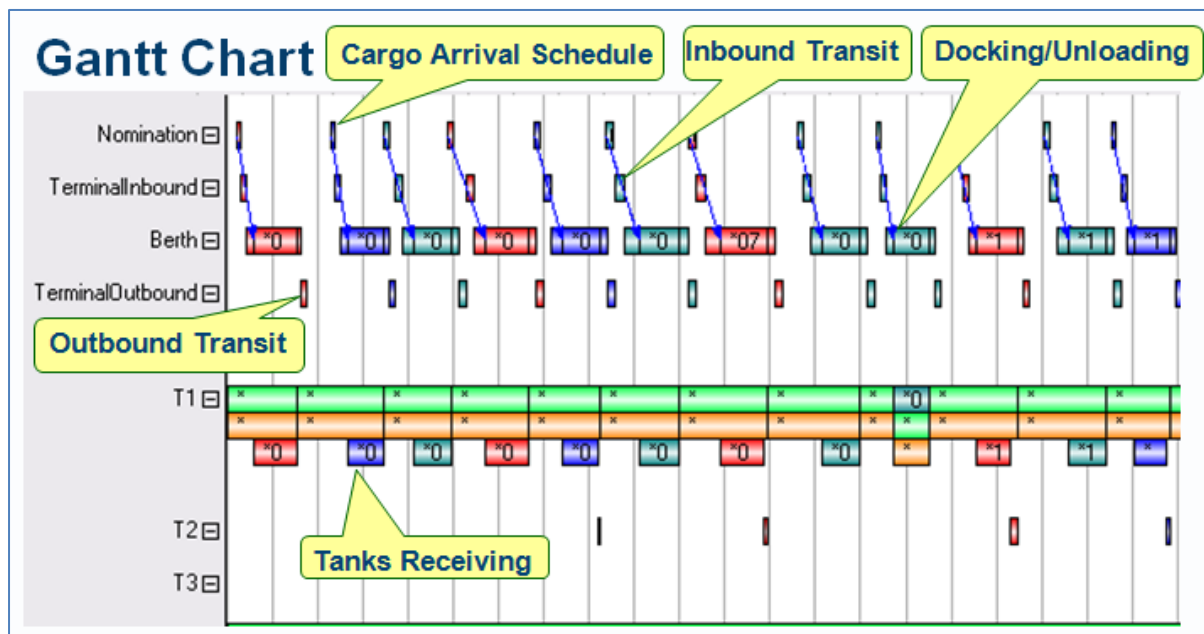
Berth availability is checked before bringing in a vessel. Berth service pools are checked for the available berth that can handle different service. The depth of the berth and the depth of the vessel are checked to confirm the docking possibility. Berth position are checked for U-Dock, the vessel width and berths distance need to be checked to make sure there is enough space for two vessels to dock in between of the two berths, and for Inline Dock, the vessel length, the manifold position and the berths distance need to be checked to make sure there is enough space. Berth status is checked since berth may be shut down for maintenance during scheduling period.

## Inbound and Outbound Nominations

Before running dock manager, shipment/receipt nominations are brought in through integration with other systems. The receipt nomination includes:

- Ship information (ship name, size, max unloading rate.)
- Parcel information (parcel composition, parcel property, for example for LNG receipt, it has heating value, specific gravity property, parcel volume)
- Arrival schedule indicate when the cargo is expected to arrive the terminal

## SIMTO Features



## Gantt Chart and Tabular Scheduling

*SIMTO* Dock Manager performs scheduling via Gantt charts or tabular views for scheduling nominations, receipts, tank transfers, process units, and shipments. *SIMTO* users have the option to create and use auto logic for automatic tank selections and shifts based on the rules set by the auto logic.

*SIMTO* Dock Manager tracks tank and stream physical properties from vessels unloading to storage to final product loading. It also tracks total inventories.

The graphic illustrates inventory tracking and planning and for scheduling and tank transfers and berth schedules.

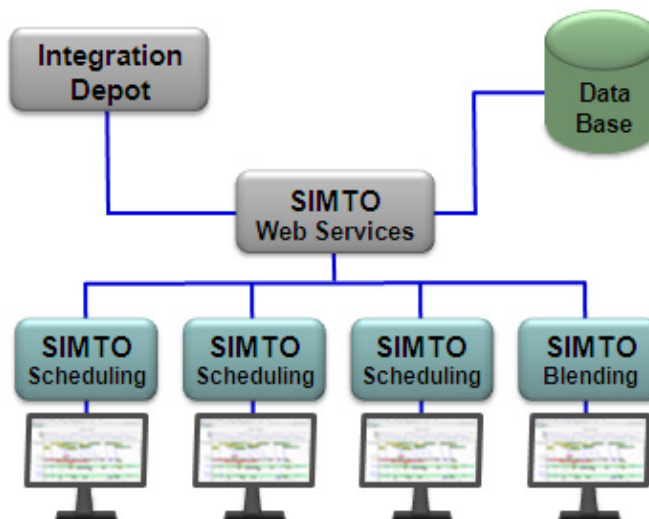
## Visualization of Results

Like all *SIMTO* products, *SIMTO* Dock Manager generates visualized simulation results on flowsheets. By pointing to a facility of interest, all related Information at the selected time, such as: parameters, feeds, products, components and quality, are shown in an information window. The facility can be a dock, a pipeline, a tank, a processing unit, a stream and so on. *SIMTO* also generates tabularized simulation results for easy viewing or exporting to other applications such as Excel.

## Multi-User and Multi-Site Operation

*SIMTO* Dock Manager allows multi-user and multi-site operation. Users can be assigned to one of the following roles: administrator, nominator, scheduler, and viewer. An administrator can change everything and save changes. A nominator can only save nomination changes. A scheduler can only save scheduling changes and has restrictions to save any model change and nomination change. A viewer can do what-if analysis but cannot save any changes.

Graphic illustrates a simplified architecture of *SIMTO*. Systems can be local or encompass a global enterprise.



## Web Services Integration

*SIMTO* Dock Manager uses web service for easy integration with nominations, vessel information, data integration from product movements, and other systems, and for data export to clients.

## Performance

Like other *SIMTO* products, *SIMTO* Dock Manager can help users achieve safe and profitable operations by predicting the outcomes against all the constraints in the model. The impact of any vessel or tank property change and parameter change can be simulated.

*SIMTO* Dock Manager can save users money by tracking and managing vessel and tank inventories. It tells the schedulers the exact time window to schedule inbound and outbound traffic and to unload ships and at what rate. Tank underflow/overflow risk and demurrage can be significantly reduced.

*SIMTO* Dock Manager can also help user plan for the long-term. Users can easily develop annual plans by month and monthly plans by days. *SIMTO* Dock Manager empowers the user to evaluate and choose new or price advantaged feedstock available in the market and to evaluate its compatibility with existing feedstock and the processing units and schedule receipts.

*SIMTO* Dock Manager gives users the flexibility to simulate the whole terminal operation or just simulate one single process unit. Users can easily change operation parameters through an interface window to evaluate the impact of different operation conditions and to apply it to the real world production.

*SIMTO* Dock Manager provides the user the ability to prepare for and adapt to daily supply changes and supply strategy changes fast.