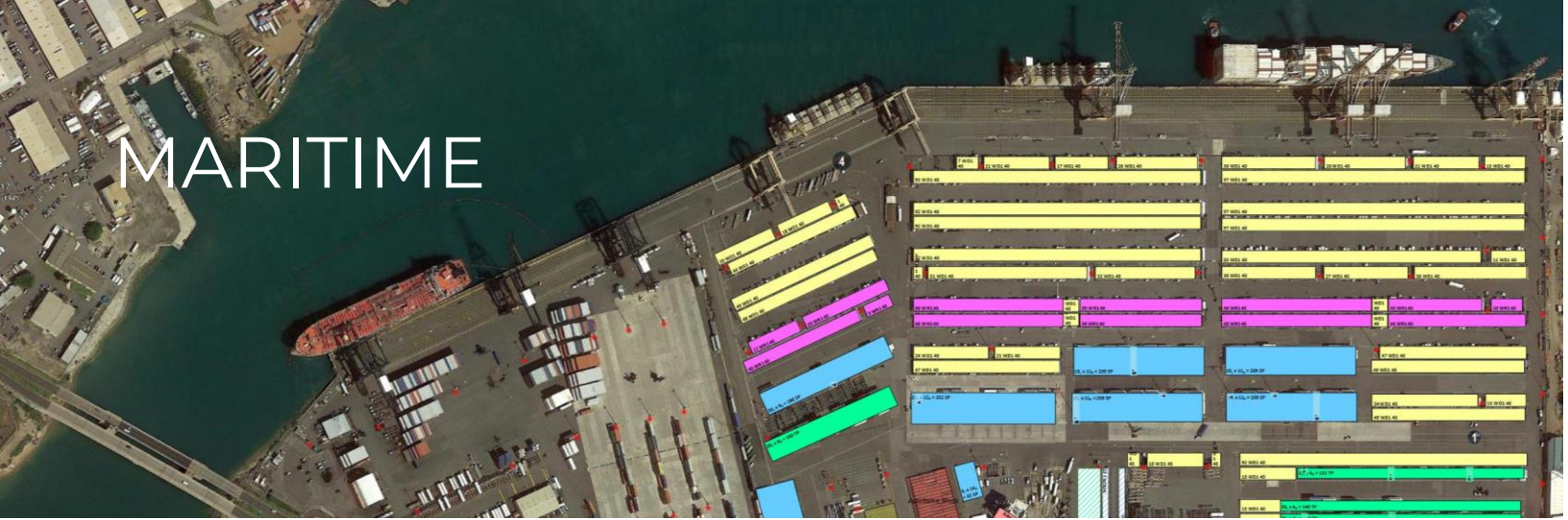


MARITIME



PRIME / Maritime

Globalisation continues to drive demand for reliable goods movement. Combined with the highly competitive freight market the need for a broader range of choices in the planning and operation of freight terminals is increasing.

WSP has developed a suite of tools for port, marine terminal, and intermodal rail terminal planning and analysis: the Port Rail Intermodal Modelling Environment – PRIME. Planning port and rail facilities requires quick, accurate consideration of layouts and operating concepts. The ultimate goal is to arrive at a layout and operating plan that balances safety, capacity, productivity, flexibility, and a good return on investment, all within complex physical, institutional, regulatory, operational, and technical constraints.

The traditional approach is for the planner to sketch plans, the draftsman to draw them in CAD and do quantity takeoffs, and for the planner/engineer to analyze them in models. If the planner decides it doesn't work quite right, the whole process has to be done over.

Next, they present a draft to the owner for feedback. This is frequently repeated through three to five iterations. The process is prone to quality risks, takes months to complete, is quite expensive, and narrows the range of alternatives to be considered in pursuit of the right answer. PRIME presents a better way.

PRIME'S CAPABILITIES

- 1 The preparation of terminal or port-wide plans for freight or passenger terminals;
- 2 Use for due diligence, feasibility, and terminal or port wide master planning efforts;
- 3 Phased development and redevelopment, with decision support including:
 - a Capacity, and capacity vs. demand gap analysis;
 - b Environmental measures (emissions);
 - c Road and rail traffic measures;
 - d Development and operating costs;
 - e Labour requirements;
- 4 Support for planning choices with transparent linkage to a robust analysis model;
- 5 A central reference for integrated plans and analysis.

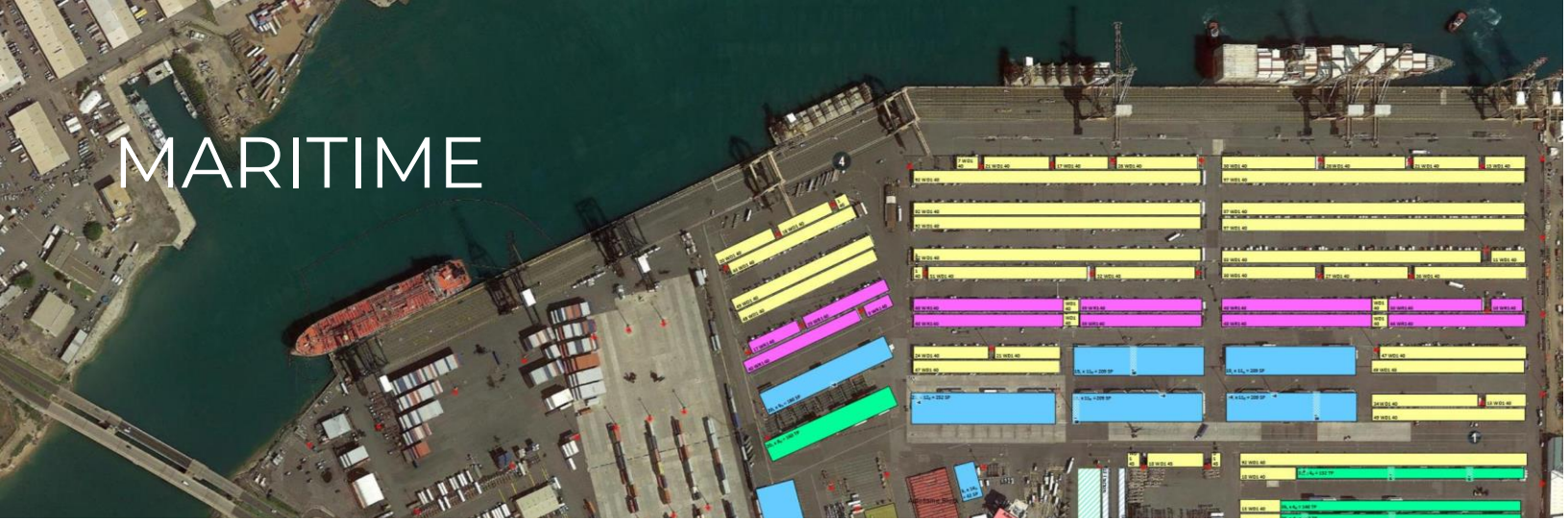
HOW PRIME WORKS

PRIME provides the engineer/planner with an integrated platform for making plans and instantly analyzing every aspect of performance, from capacity to cash flow to carbon footprint. With PRIME, the planner draws the facility in Microsoft Visio, using operating components that are intelligent, correctly sized, and safe to arrange. Custom program code transfers all attributes of the plan directly to Microsoft Excel, where a sophisticated model is ready to estimate capacity, equipment needs, equipment usage, operating expense, capital expense, cash flow, and environmental measures. This tight linkage between the plan and the analysis model means the planner can make site changes and instantly see the effect across the full range of impacts.

WSP uses PRIME for individual marine or rail terminals as well as entire port complexes, including site and model components for container, break/neo-bulk, dry bulk, liquid bulk, and RO/RO



MARITIME



facilities. We use it to test alternative plans and concepts, to find which approach works the best. We use it to prepare phased development plans, and to test performance at each stage. We use it to establish the required start and completion date of each phase. We use it to test the financial feasibility of each plan. We use it to estimate key environmental impacts, such as emissions and traffic. We use it to quantify a broad range of performance measures, and to combine them in scoring systems that match each owner's needs.

PRIME includes integration for GIS, allowing for the site planning tool to interact both ways with GIS platform and extract key geographical information to aid planners perform the study efficiently.

PRIME is also capable of two-way CAD integration. Once planning is complete, selected plan(s) can be readily converted to CAD software to allow design team to perform engineering analysis and develop design drawings. PRIME can also import CAD drawings and use the information for development of accurate planning layouts.

PRIME has made planning cheaper, faster, AND better. WSP is uniquely placed to use PRIME to rapidly prepare and evaluate complex plan alternatives, using robust, stable tools that reflect decades of planning experience, and that have been vetted by the best experts in our industry.

The visual element of PRIME allows for quick and easy manipulation of terminal layouts linked directly to operating and financial models, so the user can instantly quantify outcomes.

WSP IN ACTION WITH PRIME

PRIME has been in use since early 2014, and has recently been applied in the following efforts:

Charleston, SC, US	HK Leatherman, Sr, Marine Terminal Plan
Greer, SC, US	Inland Port Rail Yard Expansion
Oakland, CA, US	Maritime Development Study
Long Beach, CA, US	Port-Wide Strategic Land Use Study
Vancouver, BC, CA	Deltaport Marine Terminal Planning
Halifax, NS, CA	Port Master Plan to serve "Ultra" class container ships
Baltimore, MD, US	Pasha Automotive Services site
San Diego, CA, US	Pasha Automotive Services land economics
Sydney, NSW, AU	Intermodal Terminal and Load Center Plans
Honolulu, HI, US	Matson Navigation capacity augmentation
Anchorage, AK, US	Matson Navigation expansion planning
Freeport, TX, US	Velasco Terminal & port planning
Terminal on East Coast, US	Confidential due diligence for terminal purchase and conversion
Halifax, NS, CA	Trenton Depot intermodal
Vancouver, BC, CA	Customs examination station
St Johns, NL, CA	Port efficiency improvements
Ethiopia	Inland / dry rail port
Gdansk, Poland	Marine container terminal
Port of Melbourne, Australia	Detailed Port Capacity Model
Port of Newcastle, Australia	Masterplan for container terminal and multi-purpose cargo handling facility

