Traverse Board is a comprehensive platform for creating optimized robust plans through multiple time horizons.

Overview

Traverse Board is a custom made software platform to enable design, tactical and operational decisions through multiple time horizons.

Traverse Board’s calculation core consist of simulation models strengthened with optimization algorithms brought together by a customizable user-friendly interface. The tool is typically used in high risk and high investment businesses.

Integrating optimization techniques and simulation

Traverse Board can be used to create optimized day-to-day schedules and plans but is also able to analyze investment scenarios. By combining the unique strengths of both simulation and optimization, fast, reliable, robust and accurate results are created.
Traverse Board uses simulation in a planning & scheduling environment

The use of optimization should bring the 'best' solution for the whole time horizon, but real life is often too complex or uncertain. Where optimization helps you make better choices if all data is available, simulation helps you understand possible uncertain outcomes and manage them. Combining both analytic methods, better control decisions can be made.

Simulation will amplify optimization in two ways:

- Find and fine-tune (mathematical) optimization models and heuristics so the best results are achieved in all cases
- Create and handle details that mathematical optimization cannot cope with

Optimal, robust and detailed plans

Contrary to other solutions Traverse Board is able to generate proven optimal, robust and detailed plans. The mathematics and heuristics are studied using simulations and perfectly tuned before the solution is used in operations. Therefore a scheduler or planner can come up with an optimized and robust plan much faster.
Interactive Gantt Charts are used to display plans and activate or deactivate resources. Planned arrivals and stock profiles can be compared to actual data.

Value at Risk and Timeliness are two important features for determining the best plans. For supply chain solutions SCOR card reporting can be generated as well, including the robustness of these KPI’s.

Compare plans using real life uncertainty
Different plans are evaluated through simulation experiments, enabling a planner to create the optimal solution.

Create, evaluate and publish plans
Interactive Gantt Charts are used to display plans and activate or deactivate resources. Planned arrivals and stock profiles can be compared to actual data.

Traverse Board simulates a plan multiple times, using statistics to mimic real-life uncertainties
Simulation

The simulation engine of Traverse Board is used to test what-if scenario's in order to evaluate capital investments. Traverse Board can create various scenarios that can be compared on multiple key performance indicators. Typical questions that can be answered are: do we need extra storage tanks, berths, shipping, machines, handling equipment, etc..

Planning

On a tactical level it is possible to generate different plans via optimization or drag and drop. Typical questions that can be answered is whether temporary resources are needed. Various plans can be compared on Value at Risk and Timeliness of Orders. The simulation engine provides detailed data that is uncertain. Traverse Board is able to plan for real-life uncertainties, providing the most optimal and robust plans.

Scheduling

Traverse board can be linked to on-line systems, scheduling day-to-day operations. Optimization and user input are the basis for generating possible schedules based on the actual situation. Users can test various schedule options when faced with unforeseen events. Simulation provides comparisons between schedules to see the impact of changes on the short term and quantify the risk of certain decisions on the long run.
One of the main advantages of simulation is handling uncertainties. Traverse Board can simulate plans multiple times, using statistics to mimic real-life uncertainties. In this way it is possible to find out how robust a plan/schedule is and what the risks are. It is possible to compare plans for instance on its Value at Risk, the Timeliness of a Plan and Resource Utilization.

This will allow to optimize for the current schedule, taking into account future plans and uncertainties. Schedulers are able to evaluate the impact of different schedules/plans, either generated by the optimization engine or by manually altered plans. Traverse Board will quantify the risk a plan is exposed to, for the short, mid and long term.
All Time Horizons

Traverse board can cope with different time horizons:

- Strategic investments
- Long term plans
- Tactical plans
- Operational scheduling

Statistics and contingencies

Traverse Board uses statistics and contingencies to cope with increasing uncertainties on the horizon. Traverse Board will always incorporate as much details as possible. For instance, if orders for the mid/long term are unknown, the simulation engine will generate data to complete the details that are not part of a long-term planning.

Schedule with ‘known’ uncertainties

Traverse Board is able to schedule with 'known' short term uncertainties and combine it with longer term uncertainties. For instance a breakdown or bad weather can be known when creating a schedule for the next day. For the mid and long term actual data might not be known. Here the simulation engine will provide an order generator to mimic this unknown future data.
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