



SOLVOYO



CLOSED LOOP OPERATIONAL MANAGEMENT

CLOSED-LOOP OPERATIONAL MANAGEMENT

Systems that manage operational execution are dumb!

Whether ERP or OMS, TMS or WMS, these systems can do only what they are told - they follow your instructions. Businesses have made their planning and optimization systems responsible for making the best possible business decisions, yet must tell the execution systems what to do.

The goal of getting the right product to the right place at the right time has been elusive as no system has the capability to solve for orders, inventory, and transportation concurrently, nor the horsepower to optimize large-scale planning problems on a daily basis.

Linear programming models applied to the Supply Chain have been used to optimize network strategy, manufacturing, order allocation, inventory, and transportation. The problem is that these optimizations have been done in isolation. Separate optimization of a sub-process does not optimize the entire process - only specific domains or problem sets.

Large volumes also overwhelmed many planning programs. These programs have neither the mathematical efficiency nor the computing power to accommodate large volumes of products, scenarios and contingencies.

Yet, the execution system still has to be told what to order; what to stock, how much and where; what orders to fill and how to allocate; and how and when to transport -- in and out. Trying to solve this, problems were dumbed-down, solved separately, and groups of products homogenized to make the solution set smaller.

Then, people were added to the mix. Planning staff was put in charge of taking strategic and tactical plans, translating them into operational strategies, and feeding instructions to the systems that managed operational execution.

A QUANTUM LEAP FORWARD

The concept behind Closed-Loop Operational Management is quite simple -- tightly-couple planning systems to execution systems and turn optimized plans directly into action.

Turning optimized plans into action requires concurrency and speed:

- **Concurrent Planning** optimizes orders, inventory, and transport at the same time and in one plan. Rather than sub-optimize a siloed operation, you optimize the entire enterprise.
- **Speed** is necessary to quickly turnaround large volumes, i.e., process a solution with large volume of SKUs in an overnight cycle in time to meet the cutoff for the next day's execution systems.

Solvoyo's Closed-Loop Operational Management system solves these issues efficiently and effectively. Multiple corporations have implemented Closed-Loop Operational Management and run these systems on a daily basis to solve fulfillment, inventory, transportation, and customer service issues. It is a quantum leap forward!



CONCURRENT PLANNING AND BLENDING SOLUTIONS

Operational is the most detailed planning level (contrasted with tactical and strategic planning). It supports day-to-day decision making and produces both an accurate and precise balance of inventory, transportation, and level-of-service concurrently. This is essential for short life-cycle, fast-moving consumer goods; high-SKU count retail environments; and time-critical manufacturing processes.

Solvoyo's Closed-Loop Operational Management system results in an end-to-end system that interfaces planning directly with your operational execution systems. Our solution is unique in being able to deliver *detailed* and *specific instructions* by SKU that your operational systems turn into action -- how to allocate, what to order, when to order, and how to move through the pipeline, while considering real-life operational constraints, and meeting on-time fulfillment and availability targets. With Closed-Loop Operational Management, you optimize inventory for *each SKU* across a multi-echelon network, filling from the lowest cost-to-serve location, and employing the best and quickest delivery service.

What if you want to optimize for more than one goal? For example, you might want to optimize your plans to produce the highest profit margin, but also want to minimize transportation costs. Solvoyo provides "Goal Programming" that optimizes for more than one goal at a time. It *constructs* solutions by blending multiple goals for the best overall result.

The ability to generate alternate solutions with multiple goals provides flexibility. With Goal Programming, you can take a solution and optimize a secondary goal, e.g., optimize for maximum margin, but allow the solution to be attenuated by 10% if you can optimize for the lowest total transportation cost.

SMART BOX VERSUS REVIEW AND APPROVAL

With Closed-Loop Operational Management, your routine decisions are automated and run in real-time -- a "Smart Box" process that takes people out of the middle. While this is certainly the quickest and most efficient method to plan and manage operations, many are loathe to abdicate total decision responsibility to computer systems!

Solvoyo's Closed-Loop Operational Management solution allows you to automate the *level* of decision-making that you are comfortable with and implement the appropriate level of checks and balances to ensure quality control and avoid risk.

First, you select the level and types of decisions to run automatically, or to review. Routine decisions can be run in real-time and you can review exceptions prior to execution (based on rules and tolerances). You only review the rule-based exceptions prior to execution, approve or change them, and forward the result for operational execution.

This review process can be centralized or distributed. In Solvoyo's customer implementations, no two have implemented the review process the same way. In some instances, local managers review plans of what is due to them, and make changes to include local knowledge; another has centralized corporate command and control of plans. In the most complex scenarios, customers produce multiple plans for a given day with different goals and have senior planning managers review the plan summaries and select the most appropriate plan for that day.

CASE STUDIES¹

Two examples of extremely successful Closed-Loop Operational Management system implementations are presented below. They are very different in their objectives, methods, and ways-of-working. They do, however, share a common attribute -- each produced exceptional returns by using concurrent planning in a closed-loop process to deliver the right products to the right place at the right time.

HARD-DISCOUNT RETAIL CHAIN

When your business grows at a meteoric rate, inventory costs often expand exponentially just to keep pace. A discount market chain had this issue as they grew from their founding in 2008 to over 3200 stores served by 20 distribution centers! For some items, they had too much stock, leading to excessively high inventory carrying costs. For other items, they had the wrong inventory in the wrong places leading to critical out-of-stocks in the stores.

By implementing Solvoyo's Closed-loop Operational Management, they initially reduced standing inventory by 8% which translated into \$8.1M in savings and allowed them to open 130 new stores with no additional inventory investment. At the same time, they decreased their store stock-outs by 30%, resulting in an additional margin contribution of \$1.7M.

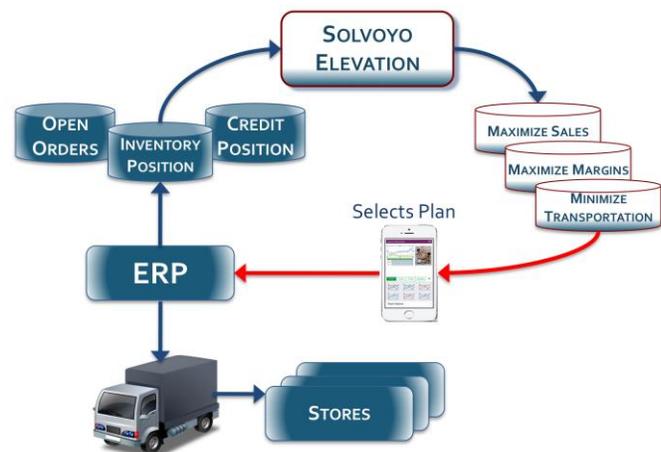
The Solvoyo solution also automated a previously-manual process and increased efficiency and effectiveness at all echelons in the organization and throughout the order-ship process.



CONSUMER ELECTRONICS MANUFACTURER/DISTRIBUTOR

One of the world's largest original equipment manufacturers set a goal to consider daily inventory availability and transportation costs together in their order fulfillment process. Further, they wanted operational managers to be able to maximize either revenue or profit while meeting the desired customer service level targets.

Because of constrained capacity, not every dealer gets everything they order. They implemented Solvoyo's Closed-loop Operational Management process to automatically produce replenishment recommendations for each store on a daily basis. Three separate plans are produced each day with different criteria for allocating on-hand and in-transit inventory to current orders: maximizing sales, maximizing margins, or minimizing total transportation costs. Corporate Planning reviews, then selects a plan.



¹ Detailed Case Studies are available from Solvoyo's Web Site: www.solvoyo.com

This streamlined previously separate and manual processes, plus eliminated pre-shipment credit approval, manual allocation of inventory, and inaccurate invoices. It increased fulfillment efficiency and substantially reduced the order-to-cash cycle time.

They realized an 18% reduction in total domestic transportation cost -- in excess of \$10M in savings to date -- and sustained this savings over time. They were able to eliminate two in-network warehouses, saving facility and personnel costs, and eliminate \$30M in standing inventory. Simultaneously, they have increased on-time fulfillment to their dealers (while lowering dealers' inventory), reduced process complexity and manpower, and increased consumer satisfaction significantly.

SOLVOYO'S COMPETITIVE ADVANTAGE

You need a scalable and sophisticated system to be able to optimize your entire supply chain and minimize costs. Solvoyo's competitive advantage is our ability to solve extremely large and complex problems quickly and easily -- ones that have confounded our competitors!

And to perform Closed-Loop Operational Management, you must be able to plan at an SKU level -- regardless of the number of SKUs you carry. While many competitors aggregate SKUs into groups or categories to reduce their model size, we always plan at the SKU level. Granularity provides insights that generic summaries cannot provide -- it highlights specific problem areas to address. Aggregate level planning cannot be converted to SKU level implementation -- the inventory policies do not equate.

We designed and built Closed-Loop Operational Management and successfully connected planning and execution for many clients. Contact us -- we'll get your people out of the middle!

ABOUT SOLVOYO

Solvoyo is an enterprise software company based in Boston, MA, and Istanbul, Turkey. We bring your business significant value through the use of innovative supply chain optimization techniques that help you minimize costs while you maximize customer service and profit.

We offer the only platform that allows you to perform your strategic, tactical, and operational supply chain planning -- and with a common data model. We are unique in being able to plan inventory, orders, and transportation concurrently. By optimizing across your entire network, as opposed to individual silos, you get business results and benefits that are multiples of traditional solutions. Concurrent planning, combined with the speed of our models, allows us to implement Closed-Loop Operational Management Solutions.

We make it easy for you to get immediate benefits -- our Software-as-a-Service based *Elevation* platform is implemented very quickly. When combined with our pay-as-you-go business model, you get an extremely short time-to-benefit and at a minimum up-front cost. The *Elevation* platform is based on the latest technology and uses state-of-the-art operations research methods to provide you with a cloud-based offering that integrates seamlessly with existing operational management systems.

We have a Rapid Assessment methodology that will quickly identify your key issues and an economic model that will provide you with order-of-magnitude benefits. We have documented cases where our technology has solved complex, high-volume problems that competitors could not solve at all!

Challenge us -- see what we can do! Call us today and let us demonstrate how Closed-Loop Operational Management can work for you.

You can also obtain more information from our website: www.solvoyo.com