

# Supply Chain Optimisation: Many Goals, One Answer

## Key Performance Indicators

### 4 goals

cost, service, risk and stock, priced on one curve

### 6 months

of warning. Today half arrive too late

### 12 to 18%

of your alerts are real. Today, one in nine

### —8 to —12%

less stock thrown away, same service

### —15 to —25%

less stock held, at the same service level

### —5 to —8%

lower total plan cost, at today's service level

### 1 week

to rerun the whole plan when anything moves

### 8 to 10

weeks to your first priced answer

A supply chain has four goals that fight each other: cost, service, risk and the money tied up in stock. Today each one is owned by a different team with a different spreadsheet. Improving one quietly damages another, and nobody can say what a decision costs in the other three.

The damage is not small. Supplier warnings are chased nine times in ten for nothing, and the real shortage still arrives without notice. Stock is set market by market, so the same product is covered three times over. One supplier carries a flow that nothing else backs up, and nobody sees it until it stops.

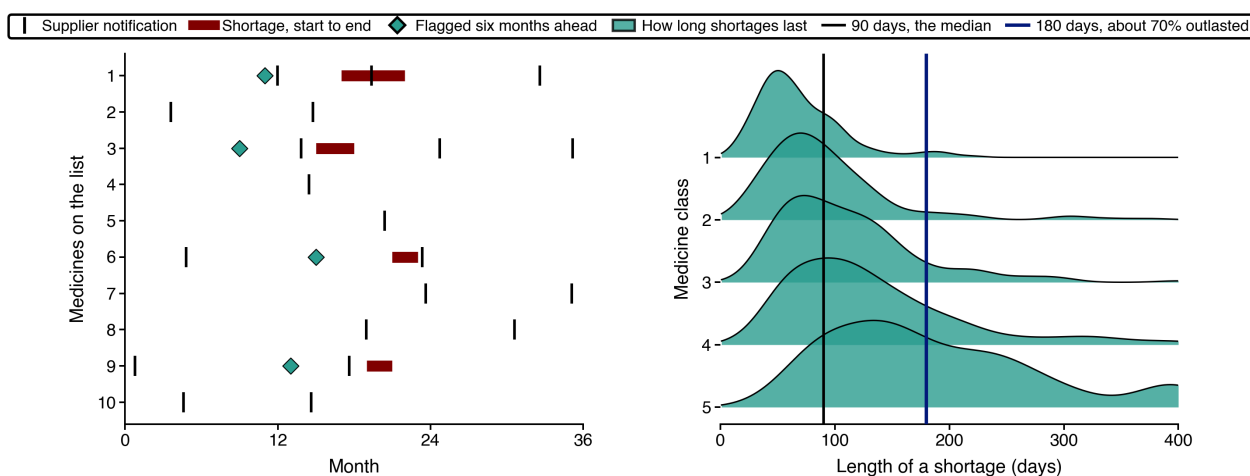
EntroMetrix builds one working model of your supply chain from records you already hold: suppliers, sites, lanes, stock and demand. It ranks which medicines will go short and for how long, shows where a single supplier carries the load, and plans the work against real capacity. Then it optimises all four goals together and hands you the curve. You pick the point, and the price of every step is already worked out.

Two facts decide where the effort goes. Half of supplier warnings arrive after the shortage has already started, so the warning has to come from the buying signal instead. And shortages are not all the same length, so one flat rule for reserve stock either over stocks the short ones or leaves the long ones uncovered.

## What You Get

- **A ranked shortage list:** which medicines go short in the next six months, and for how long.
- **Your exposure, mapped:** the flows that have no second supplier behind them.
- **A plan against real capacity:** every job in a slot, with any that would miss its date visible weeks ahead.
- **Four goals on one curve:** cost, service, risk and stock priced together, not one at a time.
- **The routes behind it:** which site serves which depot, which depot serves which customer, and which lane carries each shipment.
- **Second sources, priced:** where a backup supplier earns its cost and where it does not.
- **Reserve stock, medicine by medicine:** set by how long each shortage tends to last, not by one flat rule.
- **Fast to redo:** when a supplier, a lane or demand moves, the answer comes back in minutes.
- **Built from what you have:** no new sensors and no new data collection.

## What the model sees before you do



Left: the same ten medicines over three years. For two of the four that went short, the supplier only warned after the shortage had begun; our flag came six months before it. Right: shortages are not all the same length, so cover is set medicine by medicine rather than by one rule. Both are rebuilt on your own history.

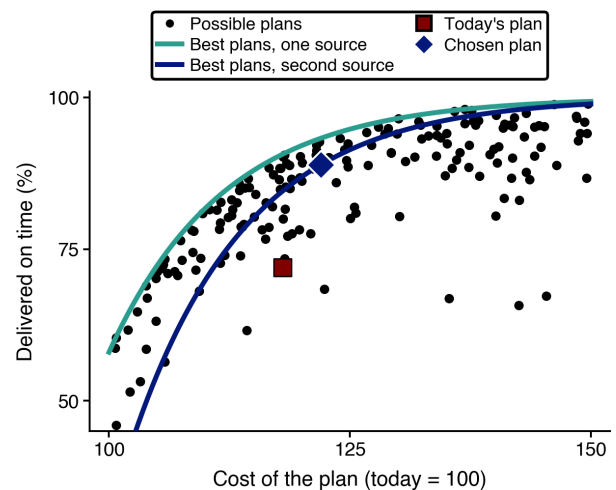
## What Each Choice Costs

There is no plan that is cheapest, fastest and safest at once. Cutting stock raises the risk of running out. A second supplier costs money before it saves any. Buying service at one site takes budget from another.

So we price the whole line instead of arguing about one number. Every plan on the curve is the cheapest way to reach that level of service and risk, and nothing off the curve is worth having. Today's plan usually sits well off it, which is the gap you can close without spending more.

You choose the point your business wants to sit at. If the board wants more certainty, you see exactly what it costs. If finance wants the money back, you see exactly what risk that buys.

The curve also settles arguments. When two teams want different things, both wants sit on the same picture with a price on each, so the meeting is about which point to pick rather than whose spreadsheet is right.



Every plan on the curve is the cheapest way to buy that level of service. Today's plan, in red, sits off it. The blue diamond is the point chosen.

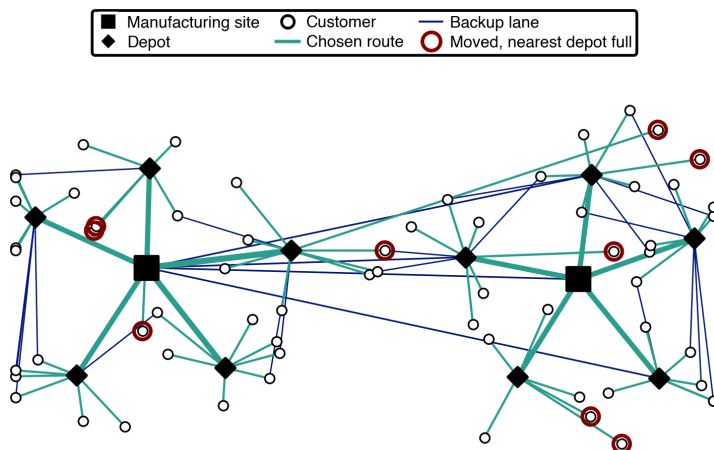
## The Routes Behind It

A point on the curve is only useful with the plan that gets you there. So the same engine sets the routes behind the choice: which site serves which depot, which depot serves which customer, where a second source earns its price, and how the reserve budget is shared out.

Capacity is respected: when the nearest depot is full, a customer is moved to the next one rather than promised a date that cannot be kept. When a supplier or a lane fails, the plan is worked out again in minutes, and the cost of that failure is shown in days and money before anyone has to improvise.

Nothing here is a black box. Every route, every depot assignment and every second source comes with the reason it was chosen, and your planners can override any of them and see what the override costs. The plan is theirs; the model just makes the price of each choice visible.

The map also shows where a second source is worth paying for. The thin blue lanes are backup routes that carry nothing until a main lane fails, and each one is kept only if the risk it removes is worth more than it costs to hold.



The plan behind the chosen point: sites feed depots, depots feed customers, every link under real capacity. The thin blue lanes are backups held for when a main lane fails. Customers moved because their nearest depot was full are ringed in red.

## How You Stay In Control

- **You set the targets:** service levels, budgets and windows are your inputs.
- **You pick the point:** we price every step of the curve; the choice stays yours.
- **Checked on your history:** fitted on the earlier years, tested blind on the later ones.
- **Refreshed in about a week:** when demand, a supplier or a price moves.
- **Your planners decide:** every plan is a recommendation, never an instruction.
- **Overrides welcome:** change any route or assignment and see what it costs before you commit.
- **Advisory only:** nothing is written to your purchasing or stock systems.

## What We Need From You

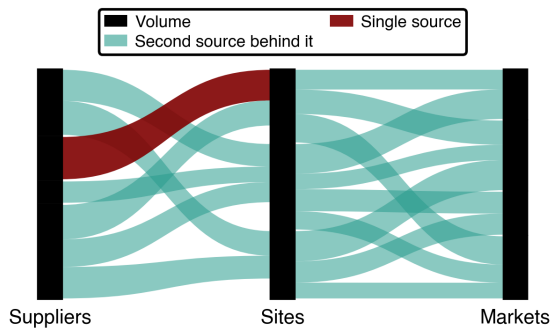
- **Purchase history:** monthly volumes by medicine and supplier, three years back.
- **Supplier list:** who supplies what, with lead times and any second sources.
- **Stock and demand by site:** what is held where, and what each site ships.
- **Your network:** sites, depots, lanes and their capacities, as you run them today.

## How It Starts

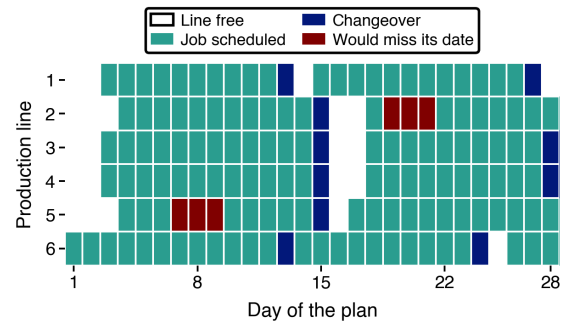
- **Weeks 1 to 2:** your records in, the model of your network built and checked against your history.
- **Weeks 3 to 6:** the first curve, the first route plan and the first shortage list, reviewed with your planners.
- **Weeks 7 to 10:** the weekly refresh running, with your team choosing the point and the model pricing it.

## What a Spreadsheet Cannot Show You

Two things stay invisible in a spreadsheet until they hurt: a flow that depends on a single supplier, which looks like every other line in the ledger until the day it stops, and a job that will miss its date, which is booked and on the plan until the week it is due. The model shows both, weeks ahead.



The red flow has no second supplier behind it. If it stops, so does the site it feeds.



Every job gets a slot on a real line. The red ones would miss their date, and you see them weeks ahead.

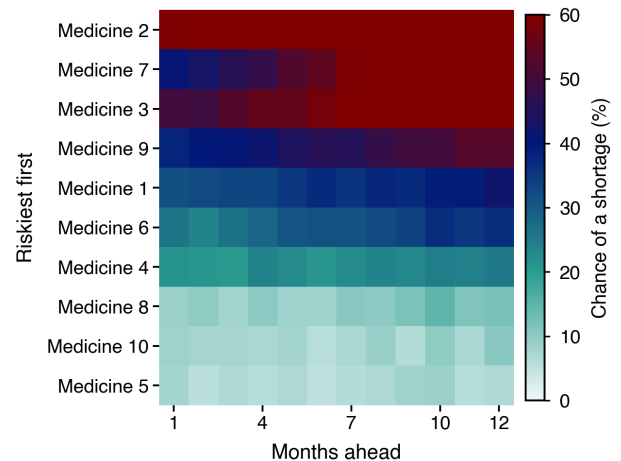
## What You Watch Every Week

The model does not hand back one plan and go quiet. Every week it refreshes the views your team acts on: which medicines are heading for a shortage, how soon, and the buying signal under each alert.

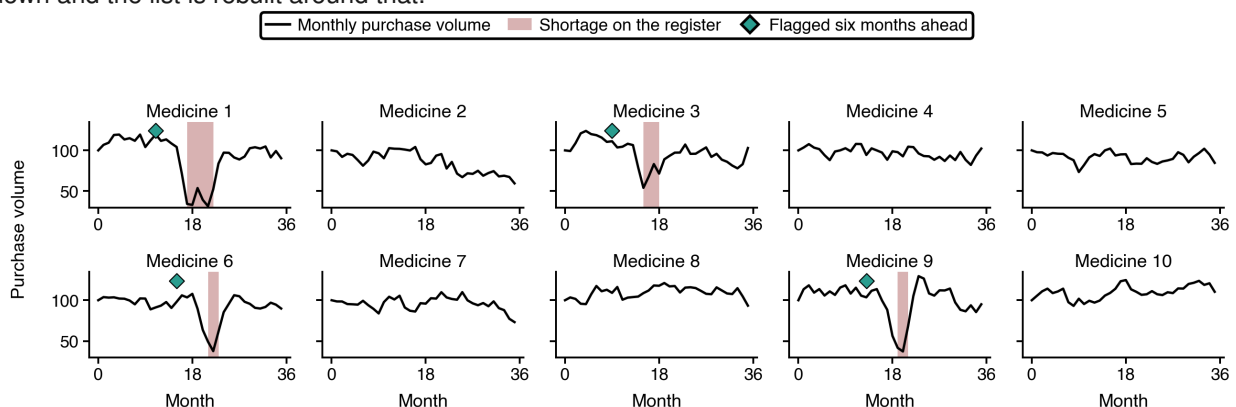
You see the risk months before a supplier says a word, and you can open any alert and check it against your own purchase figures before you act. We are straight about the numbers: ranking lifts the share of alerts that are real but cannot escape the base rate, and every figure we print is a target we model and check against your own history.

The weekly list is short on purpose. It names the medicines to act on, the earliest week each could go short and the cover you hold, so the meeting is about decisions rather than about finding the numbers.

Every alert can be traced. It links to the purchase signal it came from and shows what its risk score is made of, and a planner who knows something the data does not can mark it down and the list is rebuilt around that.



The risk map for the same ten medicines, riskiest first. The darker the row, the sooner that medicine goes short; the top rows are the ones whose buying is sliding in the chart below.



The signal behind each alert, for the same ten medicines. The red band is the shortage on the register; the diamond is our flag six months before it. Medicines 2 and 7 have not gone short yet, but their buying is sliding, which is why they sit at the top of the risk map.

## Four Goals, One Curve, One Answer

Designed for supply chain and operations leaders in pharmaceuticals

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