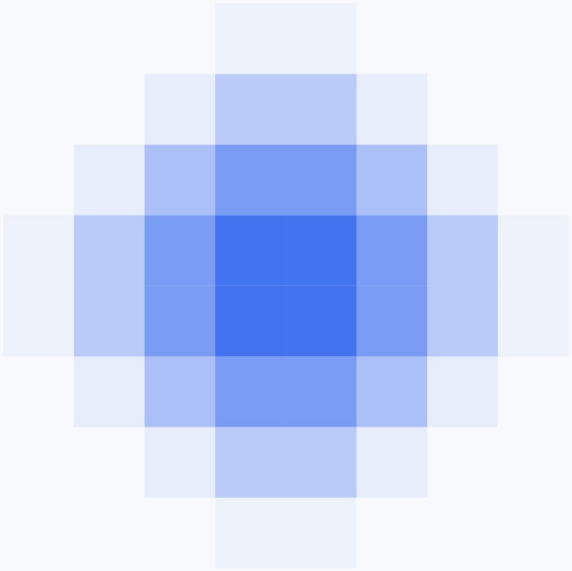
A DECISION
INTELLIGENCE POV

Plans Break. Policies Hold.



Why a decade of better predictions, better visibility, and better firefighting hasn't made supply chains more resilient — and what changes when we optimize the **policy** *instead of the plan.*

AUDIENCE
CSCO · COO · CFO · PLANNING LEADERSHIP

FORMAT
POINT OF VIEW · 17 PAGES

ISSUED BY
VYAN.AI · DECISION INTELLIGENCE

Your most experienced planner is drowning in shocks her stack *has no memory to absorb.*

08:42 DEMAND SHOCK	The overnight MRP run drops **412 fresh exception messages** — none of them cross-referenced to the 380 she resolved yesterday. Every fire arrives as a brand-new fire.
09:14 SUPPLY SHOCK	Tier-1 supplier slips nine days. Last week's solve already pushed this PO out four days; the engine has **no memory of that decision** — and proposes pushing it out again from scratch.
09:31 PULL-IN REQUEST	Sales wants a Friday pull-in for a Tier-1 customer. Saying yes **unwinds three commits** she made last week to keep the line stable. Saying no costs revenue. Nothing in the system weighs the two.
09:55 FINANCE	CFO asks why expedite freight is up **18%.** The honest answer: **the plan thrashed three times this month** — each replan abandoning what last week's plan committed to.

She's not planning.
She's thrashing — between agility and continuity, with no memory and no intelligence to balance the two.

THE THESIS

Predictions and visibility are *inputs.* Decisions are the *output.*

Walk through any large enterprise's planning floor on any given Tuesday and you will see this scene playing out. Not because the technology is poor. The forecasts have gotten better. The control towers light up in real time. The AI/ML layer sees patterns no human would catch.

The investment in predictive and visibility capability over the past decade has been substantial, and it has produced real value.

And yet the war rooms haven't gone away. The expedite spending hasn't gone away. The Tuesday morning at 8:42 hasn't gone away.

The gap that hasn't closed is the gap between seeing and deciding. Predictions tell us what's likely. Control towers show us what's happening. Neither tells us what to *do* — and so the burden of deciding, in real time, under uncertainty, with conflicting objectives, falls on humans who are already buried in exceptions.

Better forecasts don't produce better decisions. Better visibility doesn't prevent stockouts. AI-augmented S&OP doesn't reconcile sales, supply chain, and finance — it just gives them better-formatted inputs to argue over.

The reason these investments plateau is that they all feed into a planning architecture that was designed for a more predictable world. The architecture itself — sequential, single-future, master-data-driven, single-objective — has not changed.

Brittle plans turn planners into firefighters. Firefighters leak value. Value leaks erode margins, working capital, service, and trust. **This is the loop that has to break.**

> *The next decade of supply chain transformation isn't going to be about better predictions or better visibility. It's going to be about better decisions — built on top of both.*

WHAT'S ACTUALLY BROKEN

Seven specific reasons decision quality is failing.

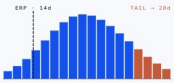
The predictions are right enough. The visibility is good enough. The decision quality is what's failing — and it fails for reasons that are now well-understood. We treat each in turn.

01

Sequential, single-future planning

02

Stale master data dressed as single values



03

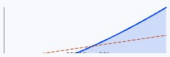
No order-line margin awareness

04

No explicit risk posture

05

Risk modeled as binary

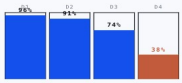


06

Optimize the plan, not the policy

07

No decision resilience scoring



→ pp. 05–11

Each failure treated in turn on the pages that follow — with the data, the math, and the shift it implies.

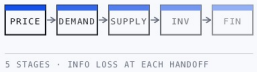
FAILURE

01

Sequential, single-future planning.

FROM → TO

From five disconnected plans to one integrated solve.



Most planning systems still solve the problem in five sequential stages: pricing → demand → supply → inventory → finance. Each stage assumes the prior one's output is fixed. Each stage adds its own assumptions. Each stage loses information when it hands off to the next.

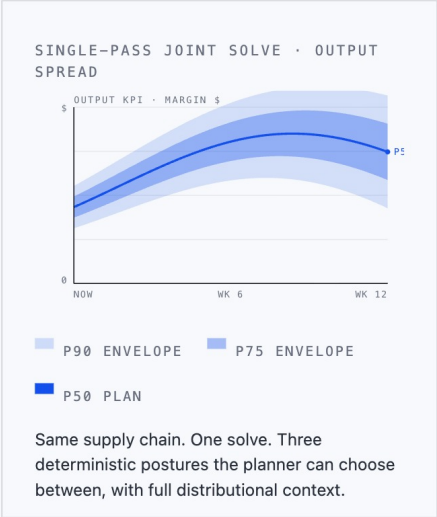
The result: every monthly S&OP cycle ends with five plans that don't agree, reconciled in the last 48 hours of the month by whoever is loudest in the meeting. The CFO commits to numbers nobody can defend operationally. The pricing team makes decisions in a different room from the supply team. The inventory plan was built on a static safety-stock formula that nobody has reviewed in two years.

There is a better architecture. It's not new — operations researchers have argued for it for decades — but until recently the compute and the math weren't there.

A **single-pass joint solve** treats the problem differently. Sensed demand and sensed supply (capacity, materials, logistics) become inputs. Pricing and promotion decisions, the resulting shaped demand, the corresponding supply replenishment plan, and the projected financials all come out as outputs — together, in one pass, as *ranges* rather than single numbers.

The planner then chooses to run the deterministic second pass at **P50, P75, or P90** of key input parameters, depending on the posture they want to take. The full uncertainty spread is visible before the deterministic plan is locked.

> *The first shift is architectural. Stop solving the problem in five stages. Start solving it as one — and produce a range, not a point.*



Same supply chain. One solve. Three deterministic postures the planner can choose between, with full distributional context.

5 → 1

PLANS RECONCILED · PER CYCLE

P50 · P75 · P90

DETERMINISTIC POSTURES, ON DEMAND

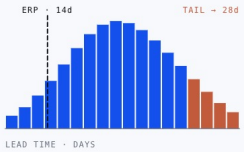
FAILURE

02

Stale master data dressed up as single-value assumptions.

FROM → TO

From static parameters to learned distributions.



Walk into the planning office of nearly any enterprise and ask a senior planner whether they trust the supplier lead time field in their ERP. The answer is almost always some version of *"not really."*

A lead time of **14 days** was set in 2023. Nobody has reviewed it. Variability around that 14 days — sometimes 10, sometimes 21, sometimes 28 — is invisible to the system. The plan uses 14. Reality uses something else entirely.

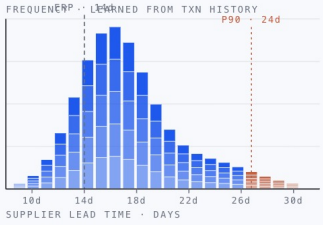
Once your planning team stops trusting the master data, they buffer everywhere. Safety stock goes up. Cycle stocks go up. Working capital gets trapped in inventory nobody can defend on a balance sheet review.

And the buffer doesn't even fix the problem — when reality drifts to the tail, the buffer wasn't sized for the tail, so the stockout still happens. Now you're carrying excess inventory AND missing service.

The fix isn't better static parameters. It's giving up on static parameters altogether. Every input driver has a distribution, learned from your own transaction history. Lead times are shapes, not numbers. Scrap rates are shapes. Demand is a shape.

> *The planning system uses the shapes — and lets the planner choose how much of each shape to plan against. That choice is the next problem.*

LEAD TIME · SINGLE VALUE VS LEARNED SHAPE



ERP VALUE · 14D

LEARNED DISTRIBUTION

TAIL RISK · >P90

The static 14-day value sits inside a distribution that runs from 9 to 31 days. The plan uses one number. Reality uses the whole shape.

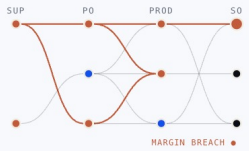
FAILURE

03

No margin awareness at the order line.

FROM → TO

From single-objective service chase to multi-objective decisions.



Picture this. Tuesday afternoon, 14:32. A customer pulls **1,400 units** of your highest-velocity product, requested for delivery on Friday. Your forecast called for 800. The order is two weeks inside lead time. Sales says yes — great account, relationship deal, good price. The planning system, asked to fulfill at any cost, says yes too.

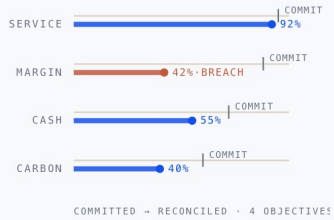
By the time finance reconciles the month, the cost-to-serve on that order tells a different story. There was expedite freight to substitute the mode from ship to air. There was overtime in the plant and excessive changeover cost. There was churn on the suppliers. There were higher-margin orders that got crowded out and missed their commitment.

None of that was visible at the moment the order was accepted. Standard COGS was used. The order looked profitable. **It wasn't.**

A multi-objective optimizer sees **service AND margin AND cash AND carbon** at the same time, on the same plan, on every order line. When margin would breach the floor, the system flags it before the order is accepted — and recommends a surcharge sized to the actual cost-to-serve.

> *Sales gets a real-time signal, not a quarter-end surprise. Commercial discipline becomes a planning constraint, not a finance after-the-fact report.*

ORDER #C-4711 · DECISION TIME VS RECONCILED



A multi-objective view shows every dimension at the moment of commit. Margin breach is no longer a quarter-end surprise.

−6.4 pts

HIDDEN MARGIN EROSION · ORDER #C-4711

FAILURE

04

No explicit risk posture.

FROM → TO

From buried defaults to deliberate posture.

Every supply plan implicitly chooses how much variability to cover. The choice is real, the dollars are real, and yet the choice itself is almost never made consciously, by name, by a person in authority. A planner picks two weeks of safety stock because that's what was set last year. The choice is buried in a static parameter nobody owns and nobody has touched in months. But that choice is doing real work — it's the difference between a stockout this week and excess inventory next quarter. It's worth millions across a network. And it's invisible.

What if the choice were explicit? What if the CSCO, COO, and CFO literally chose between three named postures — each carrying explicit floor and ceiling commitments on every input driver?

POSTURE · 01

Conservative

Cover the tail. Pay for inventory. Insulate against shock. Service is sacred.

DEMAND COVER	P90
LEAD-TIME COVER	P95
REALIZED MARGIN	22.0%
WORKING CAPITAL	+$ 8.4M

POSTURE · 02

Balanced

Find the middle. Trade inventory against shock exposure deliberately, with both numbers on the table.

DEMAND COVER	P75
LEAD-TIME COVER	P85
REALIZED MARGIN	24.5%
WORKING CAPITAL	baseline

POSTURE · 03

Lean

Run for cash. Sharper exposure to shocks accepted as the price of working-capital efficiency.

DEMAND COVER	P50
LEAD-TIME COVER	P70
REALIZED MARGIN	26.8%
WORKING CAPITAL	−$ 11.2M

> *Margin floor rises as the policy carries less safety inventory — **leaner postures unlock realized margin at the cost of service.** Reading the table top-to-bottom: more cover above, more margin retained below.*

> *This is what we mean by a **decision policy.** It's not a planning parameter. It's a posture to convert uncertain environments into resilient recommendations for action. In most organizations today, that posture is being chosen by default, not by design.*

FAILURE

05

Risk modeled as binary, not probabilistic.

FROM → TO

From "risk on / risk off" what-ifs to probability-weighted impact.

Most enterprises that do risk modeling at all do it as a binary what-if. Run the plan with the supplier disruption scenario assumed. Run it without. Compare. Decide. *This misses the actual question leaders need answered.*

The question isn't whether the risk happens. The question is: as the probability of this risk shifts from **20% to 30% to 40%**, what happens to revenue, margin, and cash? And given that probability curve, how much premium is it worth paying — in dual sourcing, in safety stock, in capacity reservation — to mitigate?

When risk is modeled probabilistically, the conversation changes. A named risk event — a port closure, a supplier failure, a regulatory shift, a demand shock — gets a probability distribution, not a flag. The plan sees its expected impact across that distribution.

The leadership team can see, in dollars, what each percentage point of probability is worth. The mitigation decision becomes an ROI decision, not a gut call.

> *This is the difference between knowing a risk exists and knowing what it costs you. Probabilistic risk modeling moves the response from reactive to proactive — before the shock has already cost you.*

TIER-1 SUPPLIER · QUALITY FAILURE EVENT

REVENUE AT RISK

MITIGATION PREMIUM · BREAK-EVEN

Each percentage point of probability is dollarized. Mitigation becomes an ROI decision, not a gut call.

FAILURE

06

No optimization of the policy itself.

FROM → TO

From optimizing the plan to optimizing the policy.

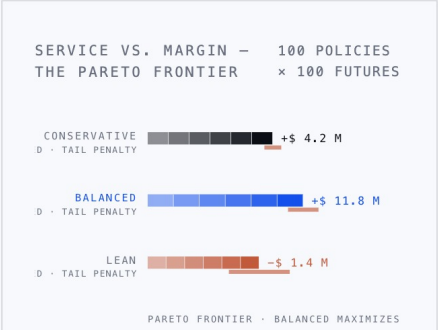
We've spent thirty years optimizing supply plans. We've built sophisticated software to find the plan that minimizes cost or maximizes service or balances some weighted combination of both. None of it has been wrong. **All of it has been incomplete.**

Because under uncertainty, the question isn't *which plan* is optimal. The question is *which policy* is optimal — across the range of futures we might actually face.

Two policies running against the same uncertainty produce two distributions of outcomes. One might deliver more in expected NPV than the other across a thousand simulated futures, after accounting for tail risk and downside variance. That delta — the dollar value of choosing one posture over another — is what we call **Policy Value Add.** It's a number. It's defensible. It's something the CFO can explain to the Board.

Meta-optimization is the math that finds the policy on the Pareto frontier where enterprise value is maximized. The argument that used to happen in S&OP meetings — should we run lean or run safe? — becomes a math result.

> *We've optimized plans for three decades. We've barely begun to optimize policies. That's where the next ten years of supply chain ROI is going to come from.*



The resilient policy sits at the knee — where margin still holds and the cliff to all-out service hasn't started. Computed, not debated.

FAILURE

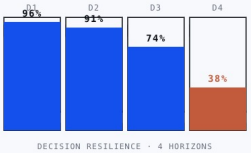
07

· HERO CAPABILITY

No decision resilience scoring before commit.

FROM → TO

From post-mortem to pre-mortem — and the question every CxO should be asking.



The plan you commit to today is a single best guess at the future. Tomorrow, when reality differs from the guess, the war room starts. The post-mortem starts. The finger pointing starts. The firefighting cycle restarts.

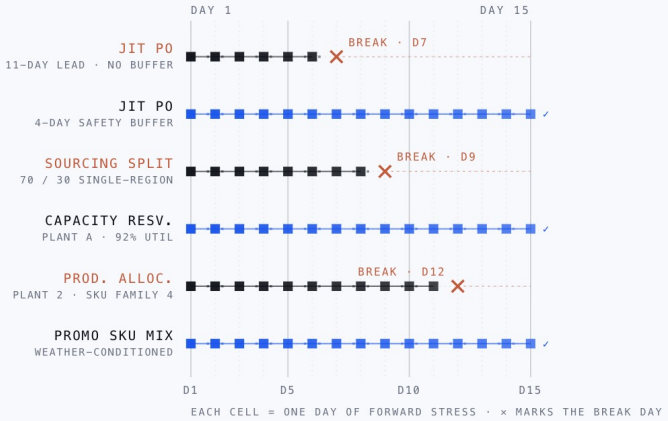
What if the stack of decisions you committed on Day 1 had already been tested across the next two weeks of plausible futures — promo spikes, supplier delays, weather shocks, named risk events firing at their actual probabilities — and you knew, decision by decision, *which ones still hold on Day 7, Day 11, Day 15, and which ones break?*

This is the question every CxO should be asking before signing a plan: *of the commitments I'm making today, which ones survive as time unfolds and shocks materialize — and which ones break, and on what day?*

Decision Resilience Scoring answers it commit by commit. A Day 1 production allocation, a sourcing split, a JIT-versus-safety lead-time PO, a capacity reservation — each carries an explicit forward score and an explicit **break day** when the future drifts far enough that the decision no longer holds.

A PO placed JIT against an 11-day lead-time, for example, breaks the moment the supplier slips two days. The same PO designed with a 4-day safety lead-time absorbs the slip and holds through Day 15. **Same supply chain. Different posture. Different break day.**

SIX COMMITS MADE ON DAY 1 · TRACKED THROUGH DAY 15 — DOES IT HOLD · OR BREAK



> *Stress-testing is something that should happen **before** you commit, not after the shock has already cost you. Decision Resilience Scoring is what makes that stress test actionable, decision by decision, at the level a leader can defend.*

A NEW OPERATING POSTURE

From plans to policies. *From firefighting to governing.*

Stop optimizing for one future. Start choosing a policy. A policy is a deliberate posture toward uncertainty *— defined by you, tested across thousands of futures, expressed in dollars. Same supply chain. Different posture. Defensible numbers.*

THE PLANNER

Stops chasing arbitrary 90% forecast accuracy targets.

Starts asking which SKUs are even **forecastable** — and shapes posture around the asymmetric cost of bias. A 10% positive bias buries cash in inventory; a 10% negative bias leaks service, revenue and market share. The two errors aren't equal. The policy shouldn't pretend they are.

THE CSCO

Stops asking "what's our plan."

Starts asking **"which policy are we running, what's its expected NPV across the futures we're planning against, and which of our committed decisions are resilient?"**

THE CFO

Stops learning about cost overruns at month-end.

They see the dollar value of the chosen posture before it's chosen — and can **defend the trade-offs to the board with math, not narrative.**

THE SUPPLIER

Stops getting pull-ins and push-outs.

Gets a **stable order signal** from a plan with built-in churn discipline — designed to absorb the named shocks before they reach the loading dock.

THE PLATFORM

A System of Intelligence above your planning and ERP stack.

VYAN is a **Decision Intelligence platform** purpose-built for the architecture this paper describes. At its core is the **VYAN Decision Twin** — a System of Intelligence (SoI) that sits above your Systems of Planning and connects directly to your Systems of Record.

It augments. It does not replace.

VYAN DECISION TWIN **System of Intelligence**	One coherent decision intelligence layer. One set of policies. One treatment of uncertainty. One objective function. Engine-agnostic — runs on top of what you already have.	SOI
EXISTING **Systems of Planning**	Advanced planning, IBP, MRP, demand & supply engines, control towers, AI/ML forecast layer. Continue to run. Continue to be invested in.	SOP
EXISTING **Systems of Record**	Transaction data — sales orders, production orders, purchase orders, stock transport orders. The historical record from which lead-time, demand and supply variability distributions are learned.	SOR

> *You do not have to use the **VYAN Decision Optimization Engine** to run a VYAN policy. You can compare the same VYAN policy executed via the VYAN Decision Optimization Engine against your current planning engines — and choose the underlying engine that gives you the best balance of solve quality and speed for each use case. **The policy framework is independent of which engine runs the math.***

SEVEN FAILURES · SEVEN CAPABILITIES

Each failure in the planning paradigm has a direct answer in the Decision Twin.

Capability · 01

Sense, shape, solve — as one global pass

Senses demand and supply (capacity, materials, logistics), shapes demand through dynamic pricing and promotion, and solves replenishment as one global solve. Outputs are ranges; planners run the deterministic second pass at P50, P75 or P90.

Capability · 02

Distribution-driven inputs

Lead times, scrap rates, capacity, and demand are learned as distributions from your own transaction history. Static parameters are replaced with learned shapes. Planners choose how much of each shape to plan against.

Capability · 03

Multi-objective decision-making at the order line

Service, margin, cash, and carbon evaluated together on every order. Margin floor breaches surface before commit, with surcharge recommendations sized to actual cost-to-serve.

Capability · 04

Explicit, named policies

Conservative, Balanced, Lean — or custom postures defined by your leadership. Each carries explicit floor and ceiling commitments. Each is dollarized. Each is a deliberate choice surfaced at the leadership level, not a buried default.

Capability · 05

Probabilistic risk modeling

Named risk events modeled with probability distributions, not binary flags. Leadership sees revenue, margin, and cash impact as risk probability shifts — and can size mitigation premiums against ROI, not gut.

Capability · 06

Meta-optimization of the policy itself

Computes Policy Value Add — the dollar delta between policies across thousands of simulated futures. The argument over lean vs. safe becomes a math result the CFO can defend.

Hero capability · 07

Decision Resilience Scoring

Every committed decision is scored on the percentage of forward alternate realities in which it remains the right decision. Day 1 decisions get explicit Day 2, Day 3, Day 4 resilience scores. Leaders see, before signing, which decisions are robust and which are gambles. **This is the capability we believe will define the next decade of supply chain decision-making — and the one no current planning stack delivers.**

THE PRIZE

What's the prize? *The dollar value of moving from plans to policies.*

The case for decision intelligence is not about replacing what's working. It is about closing the gap between the value your current planning stack is *producing* and the value it could produce if every decision were made under explicit policy — with variability modeled, risk dollarized, and resilience scored.

Across the engagements we have studied and the customer environments we have modeled, the value created by closing that gap consistently shows up across **seven KPI families**: four are direct P&L and balance-sheet impacts. Three are structural improvements that compound over time.

DIRECT FINANCIAL IMPACT P&L · BALANCE SHEET · YEAR ONE

SERVICE UPLIFT

+1–4 PTS

OTIF · CASE-FILL

Inventory positioned where variability actually lives — not where stale safety-stock parameters say it should sit. Translates directly into protected revenue and reduced lost-sale leakage.

REVENUE LIFT

+1–3 %

TOPLINE · NET SALES

Dynamic pricing and promotion decisions that respond to sensed demand and supply *in the same solve* — not weeks behind. Margin-aware order acceptance protects the high-value orders single-objective service chasing crowds out.

MARGIN EXPANSION

+100–300 BPS

GROSS MARGIN

Order-line cost-to-serve visibility, elimination of unplanned expedite freight, reduced overtime and changeover, surcharge discipline on margin-floor breaches. The biggest contributor: *eliminating decisions that looked profitable at standard cost and weren't.*

WORKING CAPITAL RELEASE

−15–30 %

INVENTORY CARRYING COST

Static safety-stock parameters give way to distribution-driven buffers sized to actual variability and explicit policy posture. Capital trapped in untrusted master-data buffers gets released — *without sacrificing service.*

STRUCTURAL IMPROVEMENTS THAT COMPOUND SIT ON TOP OF THE HEADLINE · 3-YEAR HORIZON

CASH-TO-CASH CYCLE TIME

−20–40 %

WORKING CAPITAL CYCLE

Stable supplier signals (less churn from pull-ins and push-outs), faster inventory turns under explicit policy posture, tighter alignment between commercial terms and operational reality. *Compounds quarter over quarter as supplier relationships stabilize.*

CARBON FOOTPRINT

−10–20 %

SUPPLY CHAIN INTENSITY · SCOPE 3

Mode optimization in the multi-objective solve, reduced expediting and emergency air freight, better network utilization, explicit carbon-as-objective in policy choice. *Increasingly material as Scope 3 reporting becomes binding and customers price carbon into procurement.*

PLANNER PRODUCTIVITY

−30–50 %

FIREFIGHTING TIME · REDEPLOYED

Time spent on exception-clearing redeployed into posture-shaping and policy management. **The Tuesday 8:42 AM scene goes away.** Senior planners stop being the most expensive firefighters and become the most strategic decision-shapers. Talent retention becomes itself a measurable benefit.

> *The **Policy Value Add** metric — the dollarized delta between two policies running against the same uncertainty — is how this value is measured, defended, and tracked. **Not a one-time business case.** A continuously computed number the CFO can take to the board.*

Value ranges based on observed outcomes across engagements and triangulated against published benchmarks for S&OP transformation, inventory optimization, dynamic pricing impact, and Scope 3 emissions reduction in mid-to-large enterprises. Actual results depend on starting maturity, category volatility, and the breadth of decisions brought under policy. A value-benchmarking workshop in the Bootcamp produces a tailored estimate for your specific environment.

ENGAGEMENT MODEL

Decision Intelligence Bootcamp. *With an optional Value Pilot.*

We recommend starting with a focused **Decision Intelligence Bootcamp** — a structured set of workshops over two weeks designed to build conviction across your leadership team and surface where decision intelligence will create the most value in your specific environment.

The bootcamp is delivered as a sequence of focused sessions, not a continuous engagement. Executives don't need to clear their calendars — they participate in the sessions that need them.

PHASE 01

Decision Intelligence Bootcamp

2 WEEKS · WORKSHOP SEQUENCE

01 **DI Education workshops.** Grounding sessions for your CSCO, CFO, COO, planning leadership, and key planners on the seven failures of the current paradigm and the math of policy-based decision-making.

02 **Discovery workshops** to benchmark current decision-making maturity. Working sessions with planning, finance, and operations to assess where decisions are made and where the highest-value DI opportunities sit.

03 **Value benchmarking.** A quantified view of which KPIs are most likely to lift — service, margin, working capital, cash — and by how much, based on observed gaps in your current decision-making.

04 **Executive readout.** Discovery findings + transformation roadmap presented back to the executive committee with the maturity benchmark, the value opportunity, and a recommended path from plans to policies.

PHASE 02 · OPTIONAL

Value Pilot — Parallel Run

4–6 WEEKS · WITH POLICY VALUE ADD

01 **Load your current solve** into the VYAN Decision Twin as a set of firm order proposals in a reference scenario.

02 **Decision Twin computes its own baseline solve** against the same reference scenario and the same KPIs.

03 **The delta is your Policy Value Add** — measured in your own data, against your own current state, on your own KPIs.

04 **No replacement of systems. No disruption to operations.** A parallel run that produces a defensible, dollarized answer to the question your CFO will eventually ask: *what is decision intelligence actually worth to us?*

GET STARTED

Explore a Decision Intelligence Bootcamp for your organization.

Same supply chain. Different posture. Defensible numbers.

EMAIL

pilot@vyan.ai

WEB

VYAN.AI

FOR

CSCO · COO · CFO · Planning Leadership