



When One Supplier Can Stop the Business: A Practical Resilience Play

A roadmap using product segmentation,
prioritization, and a gated onboarding approach
to build alternative supply sources

Background

Relying on one supplier for a critical item creates a single point of failure that can amplify everyday volatility into major disruption. When that supplier hits capacity constraints, quality escapes, financial distress, geopolitical shocks, logistics interruptions, or sub-tier shortages, impacts often cascade into line-down events, missed customer commitments, expedited freight costs, inventory imbalances, and firefighting that pulls attention from strategic work. Concentration also reduces negotiating leverage, slows responsiveness to demand swings, and concentrates operational and compliance risk in one relationship.

Organizations are pursuing dual sourcing to build resilience and optionality, but dual sourcing only works when “qualified” is defined, governance is clear, and transition sequencing is realistic. The practical question is: which dependencies do we address first, and how do we onboard alternative suppliers so they are truly ready when disruption hits? The process below is designed to answer this by combining segmentation, prioritization, and gated qualification so teams can move fast where they should, apply rigor where they must, and convert a backlog of sole-source exposure into evidence-backed, actionable supply options.

Alternative Supplier Roadmap

This roadmap provides a disciplined, risk-based approach to rapidly establish qualified alternate supply without creating new quality, assurance, or compliance exposure. We will discuss the Lanes, Waves, and Gates to simplify this approach. Lanes align the level of rigor to types of items in inventory, Waves sequence effort to reduce exposure quickly while starting the longest unlocks in parallel, and Gates make “qualified” evidence-based with clear acceptance, repeatable capability proof, and durable change control. The outcome is a scalable, auditable path to alternative suppliers.

The approach starts by segmenting each item into the right item “Lane”, which we will call a Standard Lane, a Critical Lane, and a Controlled Lane. This is done so the level of rigor for sourcing matches the true technical and external constraints associated with the various items. It then sequences execution in prioritized, focused “Waves” to deliver near-term risk reduction while starting long-lead qualification work in parallel and scaling throughput with repeatable governance, templates, and an active supplier funnel. Finally, it uses evidence-based “Gates” to define supplier acceptance up front, prove repeatable capability with objective data and lock in durable change control so the second source stays qualified as configurations, processes, and suppliers evolve.



Lanes (Segments)

Lane 1: Standard

Fast-track alternate sources for items with stable requirements and low external constraints.

Lane 2: Critical

Apply higher rigor for mission-impact items by proving technical performance and quality capability.

Lane 3: Controlled

Plan around approvals, configuration control, and regulated or special processes that drive longer lead time



Waves (Prioritization)

Wave 1: Quick Wins

Reduce near-term exposure quickly by clearing basic blockers and launching supplier outreach.

Wave 2: Long-Lead Starters

Start tooling, qualification, testing, and approval work early so timelines run in parallel.

Wave 3: Scale-Out Coverage

Standardize and replicate the approach to expand coverage across more items and suppliers.



Gates (Qualification)

Gate A: Acceptance Defined

Align on requirements and objective acceptance evidence before investing in qualification.

Gate B: Capability Proven

Demonstrate repeatable conformance through inspection and validation evidence.

Gate C: Change Controlled

Sustain readiness with disciplined change control and defined revalidation triggers.

Outcome: Supplier Optionality. Faster Recovery.



STEP 1 — LANES (SEGMENTS): DECIDE THE RIGHT TREATMENT PER ITEM (example included at the end of this section)

Lane 1 (Standard): Items where speed-to-optional-source is the goal and requirements are well-understood.

- **Typical signals:** stable drawings and specifications, broad material availability, routine manufacturing, low defect sensitivity, minimal customer or regulatory touchpoints.
- **What you do:** (a) segment by part family and source constraints, (b) score risk using impact × likelihood × time-to-recover and explicitly (c) include minimum order quantity (MOQ) and working-capital exposure (e.g., inventory burden and obsolescence risk) in the prioritization so “cheap to qualify” items don’t create expensive inventory consequences later and (d) map to the simplest transition path. Examples below.
- **Outputs:** lane assignment rationale, risk score + priority rank, “minimum evidence” needed to proceed, and a candidate alternate list to pull into the funnel.

a Segment by part family and source constraints

Part Family	Example Item	Source Constraints
A. COTS MRO consumables	Gloves	Many sources; minimal validation
B. Custom electronics	Printed Circuit Board (PCB) assembly	Tooling/firmware; test capacity constrained
C. Commodity packaging	Printed cartons	Many sources, but high MOQ + artwork change

b Score disruption risk using 1-5 scale (Impact × Likelihood × TtR)

Part Family	Impact	Likelihood	Time to Recover	Risk Score
A. Gloves	2	3	1	6
B. PCB assembly	5	4	4	80
C. Printed cartons	3	3	2	18

c Add MOQ + working-capital exposure (inventory burden + obsolescence)

Part Family	Cheap to Qualify	MoQ Inventory Effect	Working-capital + Obsolescence Exposure
A. Gloves	Yes	MOQ = 1 case; buy weekly	Low burden, low obsolescence
B. PCB assembly	No	MOQ moderate; build-to-order	Higher unit cost, but inventory manageable
C. Printed cartons	Very	MOQ = 100,000 cartons	High: ties up cash; high obsolescence if branding/size changes

d Prioritize + map to the simplest transition path

1. **PCB assembly (B)** — Highest operational risk (80). Transition path: dual-source with a structured qualification (PPAP-like testing, line validation, limited pilot builds).
2. **Printed cartons (C)** — Risk score is only 18, but MOQ/working-capital risk is high. Transition path: use simplest risk-reducer first: negotiate MOQ reduction, vendor-managed inventory (VMI), or interim unprinted generic cartons + labels to avoid obsolescence.
3. **Gloves (A)** — Low risk and low MOQ exposure. Transition path: straight commercial buy (add alternates, place small trial order, then split volume).

Lane 2 (Critical): Items where technical performance and quality risk drives rigor to include elements such as mission impact, tight tolerances, or key characteristics.

- **Typical signals:** critical-to-quality (CTQ) features, special inspection methods, high cost of nonconformance, history of escapes, narrow process windows, constrained test capacity
- **What you do:** (a) deepen requirements baseline (CTQs, measurement method, acceptance criteria), (b) define objective conformance evidence up front, and (c) prioritize by operational impact and qualification burden.
- **Outputs:** CTQ or acceptance evidence map, preliminary validation approach, higher fidelity estimates for lead time and cost, and a short list of “can realistically qualify” suppliers.

a Deepen the requirements baseline (CTQs, method, acceptance)

CTQ / Requirement	Measurement Method	Acceptance Criteria
Shaft OD	Coordinate Measurement Machine (CMM)	10.000 mm ± 0.005 mm
Total runout	CMM or dedicated runout fixture	≤ 0.010 mm
Surface finish	Profilometer	Ra ≤ 0.4 μm
Hardness after heat treat	Rockwell test	58–62 HRC
Cleanliness	Visual + particle test (as specified)	Meets spec; no burrs

b Define objective conformance evidence up front (“evidence map”)

Requirement Type	Evidence you Require	When Provided
Dimensional CTQs	First Article Inspection (FAI) report + raw CMM output	Pre-production / first lot
Process capability	SPC (statistical process control) on key dimensions	Pilot + ongoing
Material/heat treat	Material certs + heat-treat charts + hardness results	Each lot
Inspection system	Gage R&R results for CTQ gages	Before FAI acceptance

c Prioritize by operational impact and qualification burden

Candidate Supplier	Operational Impact Covered (H/M/L)	Qualification Burden (H/M/L)	Notes
Supplier A (has grinding + in-house metrology)	H	M	Best fit; faster evidence generation
Supplier B (outsources heat treat)	H	H	Added risk/control points; longer timeline
Supplier C (limited CMM access)	M	H	Test bottleneck likely; schedule risk

Lane 3 (Controlled): Items where external constraints drive rigor such as configuration control, approvals, regulated or special processes.

- **Typical signals:** controlled drawings, customer approval required, special process certifications, software and firmware baselines, form-fit-function constraints, export control and assurance constraints such as ITAR or export handling, FAR or DFARS flow-downs, cyber requirements (e.g., CMMC where applicable), and counterfeit prevention expectations that can disqualify otherwise capable alternates.
- **What you do:** identify approval paths and decision authorities early, surface long-lead dependencies such as test assets, first-article requirements, waivers, deviations, and build the plan around the constraint chain.
- **Outputs:** approval and authority map, constraint-driven timeline, change-control expectations, and a gating plan aligned to the customer requirement or configuration process.





STEP 2 — WAVES (PRIORITIZE): STAND UP GOVERNANCE AND BUILD THE SUPPLIER PIPELINE

Inventory single/
sole-source items



Segment into
transition lanes



Score risk &
criticality



Prioritize &
select Wave 1

Wave 1 (Quick Wins): Convert prioritized backlog into immediate, low-friction execution that reduces exposure fast.

- **Focus:** clean up requirements, confirm demand or other schedule drivers, run rapid RFIs, shortlist alternates, confirm sourceability and surge capacity and allocation risk to address questions like: what happens during constraints, who gets priority, and under what triggers.
- **Governance and guardrails:** decision rights, escalation path, “no-surprises” or change in rules, incorporate Supplier Risk Assessments (ESRA) or equivalent enterprise risk screening, as the standard supplier risk input for shortlist decisions, and add contracting readiness guardrails such as tooling ownership or access, IP or data rights, workshare allocation or priority-of-service language so alternates are practically usable and not just technically approved.
- **Outputs:** executable wave plan (who/what/when), initial alternate-supplier funnel, RAID (Risks, Assumptions, Issues, Dependencies) log and a baseline set of item requirements.

Wave 2 (Long-Lead Starters): Start the work with the proverbial long pole in the tent so the clock runs in parallel.

- **Focus:** tooling and fixtures, special process qualification, test method development, quality planning, first-article strategy, any customer or regulatory pre-coordination and confirm ownership, access, and transferability early to avoid “qualified but can’t produce or test” outcomes.
- **Data discipline:** lock the facts—spec version, revision status, acceptance evidence, inspection method, and what constitutes “equivalent” vs “requires requalification.”
- **Outputs:** long-lead integrated schedule, test or validation plan, supplier onboarding plan, and a realistic readiness forecast by item family.

Wave 3 (Scale-Out Coverage): Scale the approach to expand throughput and coverage without losing control.

- **Focus:** replicate the playbook across more items and tiers, broaden supplier bench, standardize templates, and add capacity to bottlenecks (QA review, engineering disposition, test slots etc.)
- **Controls:** dashboarding, quality gates in workflow, and cadence-based reviews such as weekly execution reviews and monthly steering meetings.
- **Outputs:** scaled funnel with measurable conversion rates, repeatable package per item (requirements + evidence + plan), and a sustained operating rhythm.



Set governance
& decision
rights



Define policies /
guardrails



Baseline
requirements
(specs, CTQS)



Identify &
screen alternate
suppliers



Create
qualification
plan (handoff
to Step 3)



STEP 3 — GATES (QUALIFICATION): MAKE “QUALIFIED” EVIDENCE-BASED AND KEEP IT TRUE OVER TIME

Gate A (Acceptance Defined): Ensure everyone agrees on what “good” looks like before spending on testing or qualification.

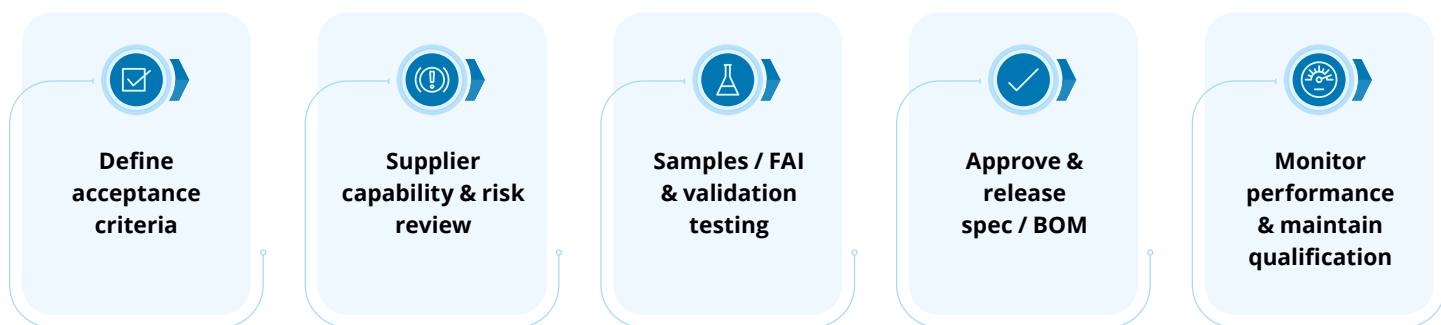
- **Entry:** lane assigned, supplier candidate identified, current specs or drawings confirmed.
- **Evidence defined:** acceptance criteria, CTQs, inspection method + measurement system, allowable equivalents or substitutions, packaging and handling constraints, and documentation requirements.
- **Exit:** baselined acceptance package and clear entry and exit criteria for Gate B, named owners and approvers, and change triggers documented.

Gate B (Capability Proven): Produce objective proof the alternate can repeatedly conform, not a paper exercise.

- **Typical evidence:** first article inspection (FAI) results, validation test results, process capability where relevant, supplier quality system evidence, repeatability across lots or builds as applicable, sub-tier critical dependency mapping (key raw material sources, special process houses, shared bottleneck sub-tiers) to avoid qualifying two “different” suppliers who still share the same single point of failure.
- **Execution controls:** test witness with traceability as needed, nonconformance disposition path, and corrective action plan if results are marginal.
- **Exit:** pass/fail decision with documented rationale, approved conformance evidence set, and readiness-to-source recommendation.

Gate C (Change Controlled): Make readiness durable over time (configuration, process, and supplier changes won’t silently break conformance).

- **Controls established:** configuration management alignment, deviation or waiver workflow, supplier change notification and approval requirements, revalidation of triggers such as materials, processes, sites, tooling changes, and periodic surveillance via scorecards.
- **Operational readiness:** order placement rules, capacity commitments, lead-time assumptions, and contingency actions if performance degrades.
- **Exit:** second source is “turn-key ready” with sustained controls, approved to procure when needed.



In closing

Dual sourcing delivers value only when it creates true operational choice—a second source that can be activated confidently under stress, not just “approved on paper.” The Lanes–Waves–Gates approach keeps the tradeoffs explicit and the work executable: Lanes align the level of rigor to the real drivers, Waves sequence effort to reduce exposure quickly while starting the longest unlocks in parallel, and Gates make “qualified” evidence-based with clear acceptance, repeatable capability proof, and durable change control. The outcome is a scalable, auditable path from a ranked backlog of single or sole-source dependencies to a pipeline of alternates that are truly ready to perform, supported by consistent decision rights, visible risk, and a governance rhythm that sustains readiness over time as designs, suppliers, and operating conditions change.

Continue The Conversation



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