

OPERATING CASE STUDY / CUSTOMER EXPERIENCE & LOGISTICS

Packaging Quality & Source Prevention

Turn frontline defect evidence into accountable packaging decisions

An anonymized operating-design case tracing damage observations through manual escalation, packaging authority and later shipment outcomes. It evaluates a cross-region operating model and the evidence required to activate it.

PROJECT CONTEXT / PACKAGING QUALITY & OPERATING-MODEL TRANSFER

BLUF / BOTTOM LINE UP FRONT

Verify the path to packaging action.
Measure opportunity, installation and value.

ANALYTICAL FINDING

A fixed filing-count threshold can flag a smaller site even when its damage rate and filing behavior match a larger site. Normalize adoption by eligible opportunities before assigning corrective action.

CONTRIBUTION IN THE SOURCE RECORD

Framed the investigation, mapped gaps and withheld unsupported sizing. Provisional registry hoop support; execution unverified.

EVIDENCE STATUS

Operating-design case; originals unrecovered. Tool relaunch is reported. The later operating loop and customer benefit remain unestablished.

BLUF: analytical inference. Source contribution: historical record. Client and internal identities anonymized.

EXECUTIVE ABSTRACT / DECISION AND OWNERSHIP

Activate a complete evidence-to-action path before committing a damage benefit

[AI/PD] The proposed Packaging Evidence-to-Action Contract (PEAC) links an eligible observation, a qualified request, an authorized packaging decision, an installed version and a mature shipment outcome. Each handoff needs its own owner and evidence.

Abstract element	Decision-relevant synthesis
Context [HR]	A regional damage investigation traced how a delivery operation could influence packaging decisions upstream. The register reports an earlier tool relaunch, followed by a design for targeting, adoption oversight and effectiveness review.
Objective [PD]	Make packaging prevention executable across organizational boundaries while preserving the receiving authority’s decision rules and the distinction between process activity and customer benefit.
Approach [RC/AI]	Reconcile source versions, separate observable states, test the proposed adoption rule, assess cross-region transportability and specify a family-level prospective evaluation.
Findings [AI]	The filing-count trigger mixes site scale with behavior. Coarse category rankings cannot establish item-level concentration; another region’s target cannot bound local benefit. Tool availability does not establish the full loop.
Decision value [PD]	Authorize a data and authority calibration phase. Replace the volume-sensitive adoption flag with qualified-opportunity measurement and require an accepted receiver before activating an escalation program.
Implications [PD]	An operating sponsor owns the offer and resources; a packaging authority owns engineering decisions; analysts preserve versioned cohorts; an independent evaluator measures mature damage and full incremental cost.

EXECUTIVE ACTION AND THRESHOLD

[PD] Start the bounded test only after intake eligibility, decision rights, installation records and outcome linkage pass validation. Scale when prospective evidence clears the net-value and physical-outcome gates; keep unsupported benefit commitments on hold.

Basis: S1 selected register. [HR] historical record; [RC] recalculated; [AI] analytical inference; [PD] proposed design. No realized packaging-prevention benefit established.

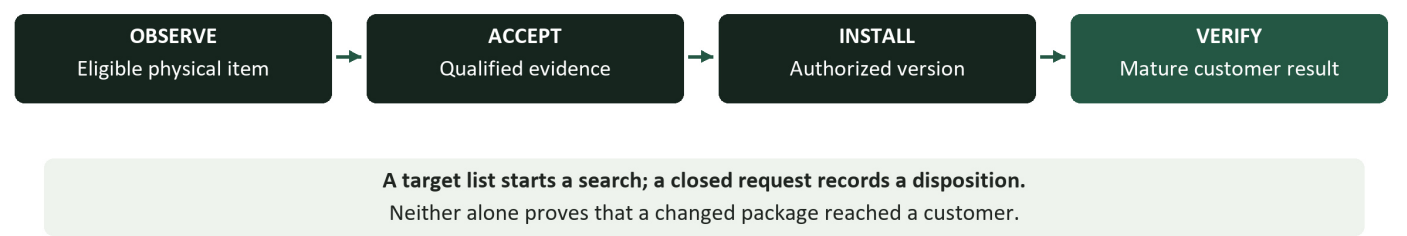
EXHIBIT 1 / OBSERVABLE OPERATING STATES

Require evidence at every handoff from a damage observation to a changed package

[HR] The investigation distinguishes an existing manual intake tool from the packaging engine and the operating layer around them. The recorded gap is a sequence of missing handoffs: targeting, adoption oversight, effectiveness verification and a named cross-functional owner.

A COMPLETE PATH HAS SEPARATELY VERIFIABLE STATES

Proposed PEAC contract / each transition needs an owner and a record



Basis: S1 D02/D05/D07; proposed state contract. No historical completion rate is asserted.

Handoff	Evidence required to advance
Observed → eligible [HR/PD]	Match the physical item, defect and packaging version to an accepted intake route. A reporting category or dashboard row does not establish the item is still available for inspection.
Eligible → accepted [HR/PD]	Record the completed manual evidence packet and the receiving owner’s acknowledgment. The source explicitly rejects bulk filing from a ranked list.
Accepted → installed [HR/PD]	Retain the decision, rejection reason, effective version and first eligible shipment cohort. A closed request may record a disposition without a protective change.
Installed → effective [PD]	Compare mature customer outcomes and incremental resources on the original assigned family cohorts. Preserve non-filing, refusal, delay and incomplete execution in the intention-to-treat estimate.

ACTIVATION GATE

[AI/PD] A reported tool relaunch establishes availability only within the record’s scope. Commission the missing handoffs as explicit deliverables; validate the receiver’s accepted signal path before describing a closed operating loop.

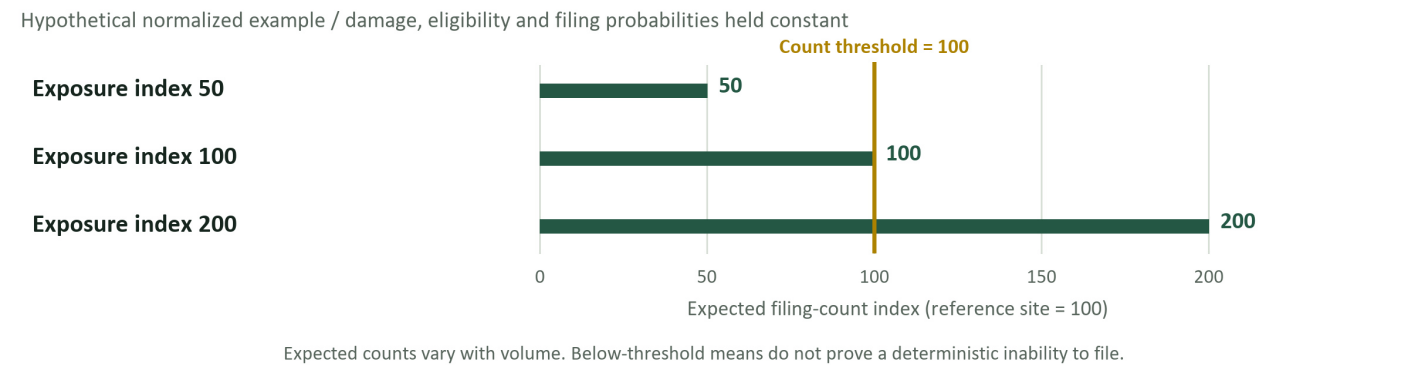
Basis: S1 master, D02/D05/D07, M04–M06 and implementation phases. Original system documents are referenced in the register but unrecovered.

EXHIBIT 2 / ADOPTION VALIDITY

Normalize filing behavior by eligible opportunities before flagging a site

[HR] The design combines a minimum filing count with a high damage-rate trigger. [AI] A rate threshold does not adjust a count threshold for volume. Equally diligent sites can therefore receive different intervention flags simply because they handle different numbers of eligible packages.

EQUAL FILING BEHAVIOR CAN PRODUCE DIFFERENT COUNT FLAGS



[AI] Let expected filings $E = V \times d \times q \times a$, where V is exposure, d the aligned damage probability, q the fraction eligible and available for this intake, and a the filing probability among those opportunities. With d , q and a held constant, E grows directly with V . A count threshold cannot isolate a .

Proposed indicator	Interpretation and safeguard
Filing fidelity [PD]	Qualified filings / independently sampled eligible, in-hand opportunities. Retain uncertainty, site mix and opportunities with missing disposition; do not infer eligibility from all concessions.
Opportunity reach [PD]	Accessible eligible opportunities / relevant damage observations. This separates loss of physical access from a frontline failure to file.
Decision conversion [PD]	Accepted, decided and installed requests shown as separate states. A rising filing rate does not establish better packaging or fewer damaged receipts.

CHANGE THE INTERVENTION RULE

[PD] Use the count flag as a prompt to investigate opportunity volume and access. Assign corrective coaching only after the evidence distinguishes missing opportunities, missing capacity and low filing fidelity.

Basis: S1 M12/D01. Algebra is an analytical extension. Diagram uses hypothetical normalized exposures and a normalized count threshold; it contains no internal scale.

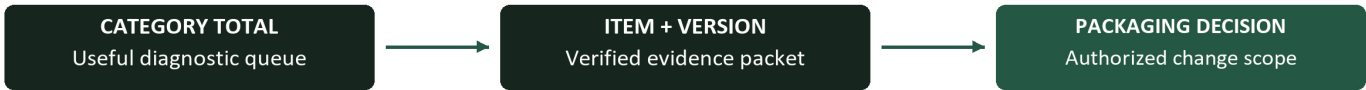
EXHIBIT 3 / GRANULARITY AND CAUSAL ORIGIN

Match the targeting unit to the decision the receiving owner can make

[HR] Item-level access was blocked, so the proposed first pull could operate at package-category grain. The design also used damage-reporting labels to prioritize upstream work. [AI] Both are useful diagnostic leads, but neither supplies item identity or physical origin.

TARGETING GRAIN MUST MATCH THE RECEIVER’S DECISION GRAIN

Analytical constraint / aggregation leaves many possible item-level explanations



A category ranking cannot identify which product version should change.
Diffuse item-level damage can still share a material or specification mechanism.

Basis: S1 M13 and D04/D05; proposed identity joins and analytical interpretation.

Available evidence	Permitted decision and missing bridge
Category ranking [HR/AI]	Locate a broad concentration of reported defects. It cannot identify which item, packaging version or supplier configuration should change; many item distributions fit the same category totals.
Item ranking [PD]	Select a candidate family only after stable identifiers, exposure, condition evidence and packaging versions are joined. Freeze the ranking window before evaluating later cohorts.
Reporting-location label [HR/AI]	Describe where the event entered the reporting system. It does not establish the point of physical damage, preventability or the organization that caused it.
Low item concentration [AI]	Weakens a top-item targeting thesis. It does not falsify a shared material or specification fix that could affect many dispersed items. Test the mechanism at its actual decision level.

RETAIN THE UNRESOLVED STATE

[PD] Route coarse categories to a diagnostic queue with an explicit information request. Do not convert them into item-specific escalations or causal ownership assignments until the necessary linkage is verified.

Basis: S1 M01/M02/M13/M16 and D04/D05. Category-to-item ambiguity and the diffuse-mechanism distinction are analytical extensions.

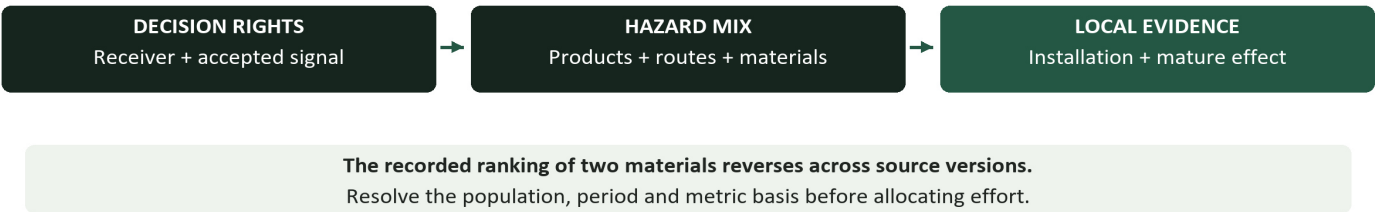
EXHIBIT 4 / TRANSFER AND SOURCE-VERSION DISCIPLINE

Transfer the operating logic only after checking the local decision conditions

[HR] Another region supplied a targeting and escalation precedent. Its headline improvement was a target; a separate narrow-population result lacked a replicable comparison design in the supplied register. [AI] Neither establishes the local effect or a numerical upper bound.

TRANSFER A MECHANISM THROUGH LOCAL VALIDATION

Historical precedent + proposed checks / another region’s target is not an effect bound



Basis: S1 M07/M15. Rank reversal is historical recalculation; transport conditions are proposed.

Transfer test	Evidence needed locally
Authority and intake [PD]	Confirm the receiving owner, accepted evidence route, response rules and engineering constraints. A coordination overlay cannot itself change the engine’s ingestion contract.
Hazard and population [PD]	Compare product fragility, packaging materials, handling routes, shipment mix and baseline practice. A mechanism can remain plausible while its effect changes across environments.
Source-version ranking [RC/AI]	The recorded ranking of two packaging materials reverses across source cuts. Preserve both versions and resolve their population, period and metric basis before prioritizing either material.
Sparse-item evidence [AI/PD]	A minimum shipment rule does not imply that every low-volume item can never trigger. Verify the actual confidence method and decision logic; use an authorized engineering review for unresolved sparse cases.

BENCHMARK STATUS

[AI] A foreign target is a planning statement, not an empirical ceiling. Use the precedent to design local operating responsibilities, then estimate local effects from a valid evaluation. Preserve source conflicts rather than averaging incompatible versions.

Basis: S1 M04/M07–M09/M15, D02/D03/D06. Method context: Pearl & Bareinboim; NIST binomial intervals; ISTA distribution-hazard guidance.

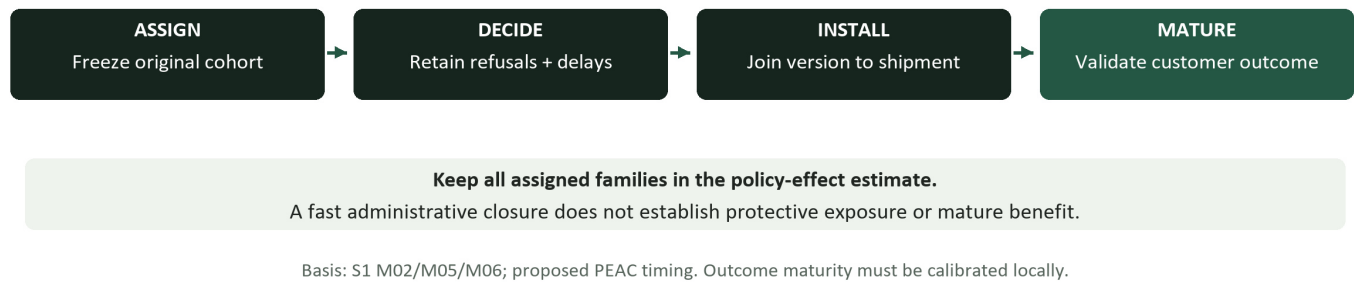
EXHIBIT 5 / TIME AND EXPOSURE

Link protection to installation and retain the original outcome clock

[HR] The source distinguishes rapid scan capture from slower customer reporting, and retains conflicting manual-resolution service clocks. [AI] Request submission, administrative closure, installation and mature customer experience are different events. An early read can contain little exposure to the intended change.

PACKAGING EXPOSURE STARTS AFTER A REAL CHANGE

Proposed measurement sequence / spacing is schematic, not elapsed historical time



Clock or cohort	Required measurement rule
Request lifecycle [HR/PD]	Preserve both documented response-clock versions until the owner resolves the scope and day convention. Measure actual acknowledgment, decision and installation timestamps separately.
Assigned family cohort [PD]	Freeze eligible families and the shipment inclusion rule before assignment. Keep no-submission, rejection and late-installation cases in the policy effect; do not analyze only successful requests.
Packaging exposure [PD]	Join each shipment to the version actually used. Design for shared product families and cross-site effects; site randomization alone may contaminate the comparison.
Mature customer outcome [PD]	Select the final horizon after calibrating reporting delay and ascertainment. Early scans support process monitoring; they cannot stand in for a mature customer outcome.

INTERPRET EARLY ECONOMICS CORRECTLY

[PD] Intake and engineering costs can arrive before protected shipment volume. The prospective model therefore evaluates the full assignment horizon, installation timing and all affected units. A short-window loss can reflect timing; it still matters to the investment decision.

Basis: S1 M02/M05/M06 and proposed PEAC evaluation. The timing graphic conveys event order only; no historical implementation timeline or measured benefit is asserted.

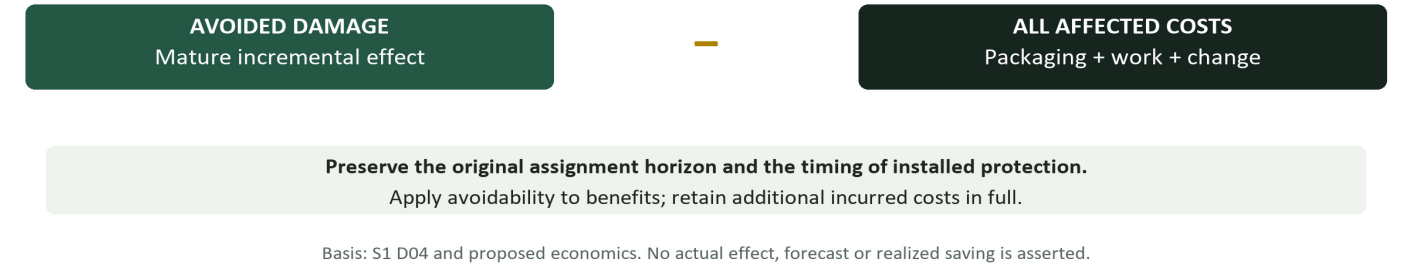
EXHIBIT 6 / ECONOMICS AND DECISION RIGHTS

Price the packaging change across all affected shipments and preserve the owner’s authority

[HR] The design sought an existing escalation route and explicitly withheld a benefit estimate. [AI] More protective packaging can reduce damage while adding material, labor and transport burden to every changed shipment. The net decision depends on the whole affected population.

A PROTECTIVE CHANGE AFFECTS MORE UNITS THAN IT SAVES

Proposed economic boundary / costs follow every changed shipment and operating activity



Economic component	Decision rule
Incremental mature effect [PD]	Estimate damage reduction from assignment to the support package relative to usual escalation. Keep installed-change effects distinct; they require additional identification assumptions.
All-unit resource cost [PD]	Include packaging, handling, engineering review, intake effort and implementation cost on their actual populations. Do not charge protective material only to the shipments whose damage was prevented.
Overlap and avoidability [PD]	Discount monetized benefit for non-avoidable expenditure and overlap where relevant. Do not discount additional incurred costs by the same factor or reclaim a concurrent material program’s benefit.
Engineering authority [HR/PD]	The receiving owner retains acceptance and packaging decisions. The operating team supplies better evidence and targeting; it cannot infer permission to lower thresholds or force a specification change.

SEPARATE DECISION VALUE

[PD] Value of information measures whether a better diagnosis changes the chosen action. Report it separately from shipment-level benefit. A useful validation hold can have decision value even when a proposed intervention ultimately has no positive operating effect.

Basis: S1 M03/M04/M07, D02/D04/D07 and proposed PEAC economics. All prospective numerical examples are hypothetical, not realized savings.

EXHIBIT 7 / CONTRIBUTION AND NEXT DECISION

Credit the forensic design and require distinct evidence for implementation and impact

[HR] The register attributes the investigation’s question, source discipline, operating-model recommendation and refusal to invent a benefit to the case author. It also identifies the limits of that role: the tools, decision thresholds and proposed local execution were not established as personally owned.

DOCUMENTED DESIGN AND OPERATING DELIVERY NEED DIFFERENT EVIDENCE

Contribution boundary / the case preserves the author’s bounded analytical role



Registry support is provisional for the investigation and recommendation.
Later activation, installation, causal outcomes and savings remain unestablished.

Basis: S1 attribution, D01–D07 and implementation status. No external peer-review certification.

Claim / accountable role	Process-tracing grade and next evidence
Investigation / case author [HR]	Provisional registry hoop support for framing the signal-path question, directing verification and distinguishing structural from operational gaps. Authenticate the original documents before strengthening attribution.
Recommendation / case author [HR]	Provisional registry hoop support for the regional comparison, manual-intake correction, claim ledger and sizing hold. These establish a documented recommendation, not its acceptance.
Activation / operating sponsor [HR/PD]	Unestablished. Name the sponsor and receiver, confirm the opportunity data and fund the workflow. A referenced relaunch is not evidence that the later loop was operating.
Execution and effect / owners and evaluator [PD]	Unestablished historically. Record qualified filings, decisions, installed versions, mature outcomes and full costs; use the proposed comparison to estimate the additional policy effect.

NEXT EXECUTIVE DECISION

[PD] Appoint the receiving authority and operating sponsor; authenticate the source, validate eligible opportunities and join installation to shipments. Advance to the prospective test only when those prerequisites and feasible recruitment are documented.

Basis: S1 master attribution, D01–D07 and implementation status. Review grades concern derivative registry support; no smoking-gun or doubly decisive attribution is claimed.

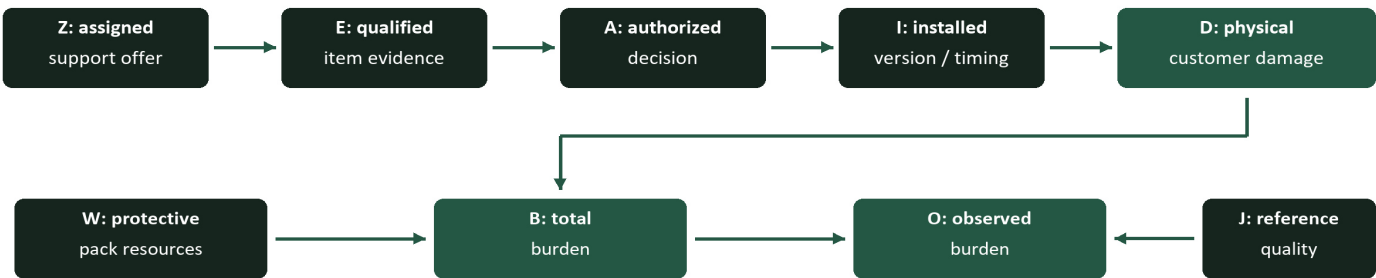
TECHNICAL ANALYSIS

Trace the path from item evidence to installed protection

[AI/PD] The proposed Packaging Evidence-to-Action Contract (PEAC) connects qualified evidence, authorized decisions, installed packaging and mature outcomes. A targeting list, a submitted case and a production change are different events.

EVIDENCE, AUTHORITY AND INSTALLED EXPOSURE ARE DISTINCT

Proposed DAG / arrows are causal hypotheses; no historical treatment effect is identified



Cost edges: $I \rightarrow W$; $Z \rightarrow K$. K allocates intake, engineering and coordination capacity.
 $Z \rightarrow H \rightarrow D$: support can change other handling, violating an installed-change IV exclusion.
 $Z \rightarrow Q \rightarrow R \leftarrow D$: capture and physical damage jointly affect recorded concessions.

C/U: fragility, supplier/package mix, route hazards, capacity and concurrent work
Grouped confounding paths: $C/U \rightarrow E, A, I, H, D, W, Q$. Assignment isolates the support offer.

H: other handling; Q: reporting/capture; R: recorded damage. K enters the net-value decision once, outside B.
Manual evidence acceptance does not establish automated ingestion. O uses an independent reference process.

[PD] Z assigns support; E is qualified item evidence; A is the authorized packaging decision; I records installed version and timing. I changes physical damage D and variable protection resources W. D and W determine burden B, measured as O through reference quality J. Targeting, intake assurance, engineering capacity and coordination enter fixed incremental budget K once, outside B.

[PD] Z may also change other handling H and reporting Q. H can affect D; D and Q influence recorded concessions R. The total offer effect therefore need not equal the effect of installed protection alone. Conditioning on accepted cases or installed changes would select post-assignment populations.

[AI/PD] C/U represents fragility, existing packaging, distribution hazards, recipient capacity and concurrent changes. The register supports a description of these paths, not identified edge effects. Manual item evidence does not establish automatic engine ingestion. The support trial retains the receiving owner’s approval authority.

Basis: registered signal-path investigation [HR]; proposed PEAC DAG and total-offer estimand [PD]. Arrows are hypotheses; production behavior is not authenticated by repeated documentation.

TECHNICAL ANALYSIS

Verify each handoff before treating a documented mechanism as live

[HR/AI] The investigation corrected a proposed bulk-filing route and separated local escalation from centrally controlled engine inputs. Those are valuable scope constraints; the available register does not substitute for a current production trace.

Claim being tested	Evidence required [PD]
Documented eligibility	Versioned intake specification, required physical evidence and an identified receiving owner. Repetition in one source is one provenance path.
A case reached the recipient	A linked submission and receipt under authorized access, including rejection reasons and missing records. A generated target list is insufficient.
An engine accepted a signal	Current source-to-input lineage and an authorized controlled trace. Manual referral and automated ingestion are not interchangeable.
Protection actually changed	Approved specification, effective installation date, package version and covered future cohorts. Case closure alone is insufficient.

[AI] The source’s verification labels describe its own sourcing assessment. They do not make repeated quotations independent, prove that documentation remains current, or establish that an undocumented route cannot exist. Preserve source lineage and test the claimed boundary with the accountable owner before promising an integration.

[PD] Maintain separate clocks for evidence capture, receipt, review, decision and installation. Keep conflicting service standards visible as versioned alternatives until their population, start event and working-day conventions reconcile. A response promise is not a promise of installed protection.

[AI/PD] The documented sample minimum and confidence condition do not imply that low-volume items can never trigger. Eligibility, observed events, interval method, tail and threshold jointly determine the decision. Obtain the exact authorized rule. A low-volume engineering-review route is a separate decision; it is not permission to lower an engine threshold.

[HR/AI] The source recognized a local recovery-versus-escalation conflict that the transfer design did not resolve. More targeting cannot remove that conflict automatically. Test how an item remains safely handled while evidence and upstream decisions proceed.

Basis: registered intake, ingestion and authority constraints [HR]; provenance and threshold interpretation [AI/PD]; NIST confidence-interval guidance. No production integration or impossible-trigger claim is made.

TECHNICAL ANALYSIS

Measure adoption against eligible opportunities, not a rate-and-count mismatch

[AI] A high damage rate and a low filing count do not establish nonadoption. Rate, exposure, physical availability and valid packaging evidence determine the opportunity to file.

Measure	Denominator and interpretation [AI/PD]
Any-use adoption	Eligible sites with at least one qualifying use divided by eligible sites. This does not measure opportunity coverage or case quality.
Filing fidelity and reach	Fidelity: valid submissions / eligible in-hand opportunities. Reach: accessible eligible items / relevant damage observations. Preserve unknown eligibility separately.
Installed protection	Original future units receiving the authorized version divided by all original eligible future units. Acceptance alone is not installation.

[AI] Let F be a fixed filing quota and E the realized eligible in-hand opportunities in the same unit and window. If $E < F$, complete uptake cannot meet the quota under a one-opportunity/one-filing rule. Expected opportunities $V \times r \times q$, for exposure V , risk r and eligible/capturable fraction q , are a planning screen; an expectation below F is not deterministic impossibility.

[AI/PD] Equal rates can coexist with different counts: a small diligent site can fail a quota while a larger site with poorer fidelity passes. End-to-end coverage includes inaccessible eligible items only when independent reference evidence establishes that eligibility; otherwise report bounds. Reconcile all-damage versus transit-specific trigger variants. A missing adjusted dashboard does not preclude simpler any-use measurement.

[AI] Package-category totals do not identify item concentration: the same aggregate can contain a few dominant items or many diffuse items. Coarse-grain targeting can begin only at that grain. Do not label its ranked categories as a verified item-level opportunity list.

[AI/PD] Failure to find a concentrated top-item tail challenges that targeting strategy, not every upstream remedy. A common material or specification can affect many individually small items. Compare prospective benefit, reachable authority and cost by mechanism; neither damage volume nor a ranked list establishes preventability.

Basis: source adoption-rule and granularity gaps [HR]; exposure/feasibility identities [AI]; proposed distinct adoption and protection denominators [PD]. No historical adoption rate is estimated.

TECHNICAL ANALYSIS

Transfer a specified operating mechanism, not a foreign ambition

[HR/AI] The foreign headline was a target rather than a demonstrated delivered effect in the supplied evidence. It is therefore neither a destination forecast nor a statistical or physical upper bound.

Transfer condition	Test before relying on it [PD]
Same treatment version	Specify evidence support, recipient authority, decision rule, installed material and operating response. A shared program name is not a common treatment.
Comparable effect modifiers	Compare product fragility, supplier/package mix, route hazards, volume, capacity and current baseline protection. Preserve common-support failures.
Comparable measurement	Align original units, defect taxonomy, actual package version, exposure and maturity. Reporting labels cannot assign physical origin.
A usable recipient	Obtain accepted ownership, working intake, capacity and installation responsibility. Reused dashboards or a borrowed responsibility chart do not establish delivery.

[AI] Transportability methods require explicit assumptions about what changes across settings and what remains stable. Even a valid source-region effect would need that bridge. Here the headline target lacks an identified effect to transport. A reported success for a different product/process example is a hypothesis-generating precedent, not an estimated effect for this package.

[HR/AI] The material-risk ordering reverses across source cuts with different stated bases and windows. Keep both versions and their lineage; do not average them or select the more favorable ranking. A cross-version rank change is not evidence that one material became safer.

[AI/PD] Internal-transfer research identifies recipient capability, causal understanding and relationships as potential constraints. The absent accepted owner in this proposal is an unresolved delivery gate, not proof of the sole cause of nonadoption across the organization.

[PD] Validate packaging against the actual distribution hazards and representative production items, then monitor mature field outcomes. Engineering tests support the chosen configuration; passing them does not supply a causal field-benefit estimate or certify the proposed operating transfer.

Basis: registered target and conflicting material cuts [HR]; Pearl–Bareinboim; Hernán–VanderWeele; Szulanski; ISTA2020. No source-region effect or transport coefficient is estimated.

TECHNICAL ANALYSIS

Link each installed version to the cohorts it could actually protect

[AI/PD] A faster case response cannot retroactively protect units that already passed the packaging decision. The evaluation must separate decision latency, installation coverage and customer-outcome maturity.

[PD] Freeze original future customer units and scheduled cohorts before support assignment. Retain refusal, no filing, no installation, holds and cancellations. Link each unit to the version actually used. An installation occurring halfway through the observation horizon has less covered exposure than one installed before its first cohort; equal acceptance rates can therefore produce different effects and costs.

Construct	Measurement contract [PD]
Physical damage	Independent product-condition evidence against a prespecified tolerance; distinguish outer-package degradation, damage origin and customer claim coding.
Decision and installation	Separate case acceptance, approved specification, implementation confirmation and effective coverage. A resolution status cannot fill a missing installation date.
Mature customer outcome	Original promise plus a prespecified ascertainment horizon; preserve event, claim, recognition and extraction dates, with unresolved-truth bounds.
Resource use	Evidence collection, engineering, protection materials and handling costs assigned once to the same original-unit horizon. Material cost can accrue without prevented damage.

[AI] Fast process-scan availability does not validate a later concession tail. A before/after comparison around decertification also changes season, mix and selection unless a valid counterfactual is retained. Do not use a cohort’s eventual accepted status to choose its baseline or follow-up.

[PD] Audit a random core of 240 linked histories plus weighted rare exceptions. Two blinded coders independently assess eligibility, physical condition, validity and installation. Report confusion matrices, prevalence, agreement and kappa intervals; simulate precision under observed clustering. The iid raw-agreement screen is about ±6.3 percentage points, not a kappa guarantee.

[AI/PD] Surrogate-endpoint research motivates a narrow warning: activity and case resolution cannot stand in for mature benefit without validation. Keep linked intermediate measures for diagnosis while making the customer/resource contrast the funding endpoint.

Basis: proposed linked-cohort and reliability design [PD]; source clock/measurement gaps [HR]; Prentice; Cohen. No historical mature treatment contrast is supplied.

TECHNICAL ANALYSIS

Protect targeting from selection noise and changing denominators

[HR/AI] The proposal uses high-damage sites and ranked products to direct attention. These are selection rules; they do not create an untreated comparison or identify the fraction a packaging change can prevent.

Variation and version discipline

[PD] For each compatible ordered series, MR is the absolute adjacent difference. Tentative individual limits are $\text{mean}(x) \pm 2.66 \times \text{mean}(\text{MR})$, with MR upper limit $3.267 \times \text{mean}(\text{MR})$. Small samples, mixed maturity, seasonal shifts, changing populations and source-version forks prevent a stable-process interpretation. Do not manufacture weekly values from a quarter total or treat a target as an observation.

[HR/RC/AI] The private audit retains 29 screens: seven ordered context sequences; four partial-period sensitivities; one maturity pair; seven source-version comparisons; four target pairs; two plan/attainment references; two selection funnels; one form redesign; and one rounded prior-count reconstruction. No point or moving range crosses its tentative bounds. No stable operating phase, fixed-item mature follow-up or eligible Laney panel is established.

Selection, moderation and transport

[AI] Cost ranks select volume and unit value as well as defect risk. A small exposed item can have a volatile high rate; a large item can dominate damage count with ordinary risk. Reporting-node labels, material grouping and different automation touchpoints are potential moderators, not causal ownership assignments.

[PD] Fix target selection and analysis weights before assignment. Keep nonfocus observations and measure repeated untreated rankings where possible. A hypothetical worst-decile normal score averages 1.755 SD above the population mean; repeat reliabilities 0.25/0.50/0.75 imply untreated reversion of 1.32/0.88/0.44 SD. These are sensitivity inputs, not a historical reversion estimate.

[PD] Prespecify product fragility, baseline protection, regional hazards, node type, manual handling, recipient capacity and version coverage as moderators. A remedy for a liquid process path need not benefit another product class. Report compatible within-stratum contrasts and a standardized total; separately rebased indices cannot be averaged into a network effect.

[PD] Prioritize controlled learning when item counts are low. Independent engineering review can complement a statistical gate without implying that the gate is invalid or authorizing a threshold change. More filings cannot repair an unidentified effect.

Basis: registered targeting and heterogeneous source cuts [HR]; proposed XmR/RTM and moderator analyses [PD]; NIST; Laney; Barnett. Final source inventory remains in the private reproducibility audit.

TECHNICAL ANALYSIS

Credit the forensic correction without importing execution or ownership

[HR/AI] The register supports a bounded contribution to mechanism diagnosis, sourcing discipline and transfer design. It also records an earlier relaunch; that event is distinct from the later proposed targeting and verification loop.

Contribution claim	Process-tracing grade and boundary [HR/AI]
Framed the signal-path question	Provisional hoop: recorded questions, verification directions and scope decisions support analytical leadership. Original records still require authentication.
Corrected intake and benefit claims	Provisional hoop: the register describes manual-intake constraints, target/result correction and refusal to invent a local benefit. Repeated summaries are not independent support.
Proposed the transferred operating loop	Provisional hoop for design. A responsibility chart and first-pull instruction do not establish accepted ownership, deployment or adoption.
Owned tools, policy or customer benefit	Unestablished. Tool ownership, engine thresholds, packaging decisions and mature effects are separate claims held by different roles.

[AI] Generated document properties cannot authenticate a human’s execution. A last-modifier entry supports document involvement, not sole authorship of the system or its results. Source-ledger labels and two matching quotations do not warrant a smoking-gun or doubly decisive grade.

Consolidated limits and reproducibility

[HR/AI] Original-source authentication and current production behavior remain incomplete. Item concentration, opportunity coverage, accepted ownership, installation exposure and mature intervention effects are not established. Source versions conflict on material rates, process baselines and service clocks. Borrowed targets and unvalidated cost bases cannot resolve economics.

[PD] Preserve source/version hashes, alternative calculations, receipt and decision records, item-family-version crosswalks, original cohort clocks, reference labels and executable analyses. Raw identities and values stay private. Indexing preserves arithmetic but cannot repair incompatible populations or establish causality.

[AI] Missing completion records establish neither failure nor success outside the supplied corpus. Later forensics, local handling studies and measurement-remediation projects remain separate. The earlier reported relaunch does not prove that the later design was implemented or that its targets were achieved.

Basis: registered role, chronology and implementation gaps [HR]; provisional process-tracing grades [AI]. Supported case type: evidence reconciliation and operating design, not verified impact.

TECHNICAL ANALYSIS

Randomize the support offer at the packaging-decision boundary

[PD] Assign independent product/package-decision families to evidence-and-targeting support or usual approved escalation. Preserve the same owner authority. A catalog-wide specification change can affect many stations, so station randomization alone may not isolate the treatment.

[PD] Freeze eight future scheduled cohorts and original-unit eligibility before support assignment. The planning model uses equal exposure by family/cohort; unequal field volumes require prespecified weights and re-powered covariance. Ascertain each original unit at its original promise plus 42 days. This is a proposed horizon requiring pilot validation, not an established ultimate damage clock.

[PD] Positive ITT is usual-minus-support mean mature customer/resource burden across all original units, including no valid evidence, refused cases and no installed change. Track approval and installation timing as mediators. Do not condition the primary estimate on either. A separate installed-change effect needs additional assumptions and a different analysis.

[PD] The model distinguishes early, partial-horizon and absent installation. It charges packaging resources on every protected unit, while damage prevention depends on the changed specification. Its probabilities, costs and covariance are synthetic. Validate finite-process and working-distribution behavior at the economic boundary; a large assumed alternative alone does not establish useful power.

[PD] Match or stratify original fragility, package version, route hazards and volume. Group shared supplier/specification authority and engineering capacity within assignment domains or measure spillovers. Freeze before/after standards; retain background handling changes. A direct handling response to support prevents treating assignment as an unquestioned instrument for installed protection.

[PD] Require economic clearance above fixed incremental budget K and a physical-damage gate. The model sizes these two gates only; service, nonfulfillment, material-use and missing-truth safeguards require separate calibration before field use. K covers targeting, intake assurance, engineering capacity and coordination; measure actual increments. Research ascertainment is distinct. Discount avoided losses, not added packaging expense.

[PD] If rollout is staggered, estimate group-time ATT against not-yet-treated families with no anticipation, common support, interference controls and baseline/event-time diagnostics. Nonsignificant pretrends are not proof. Recalculate maturity and power for that design; no numerical assurance transfers from the proposed randomized model.

Basis: proposed family-level encouragement and whole-offer ITT [PD]; Hudgens–Halloran; Hernán–VanderWeele; Callaway–Sant’Anna for the unpowered staggered alternative. No trial has been executed.

TECHNICAL ANALYSIS

Make the transfer contract falsifiable at each decision boundary

[AI/PD] PEAC extends the source’s useful refusal to invent benefit into a testable contract: valid opportunity, reachable decision authority, installed protection and mature value must remain linked without becoming interchangeable.

Proposition [PD]	Disconfirming evidence or boundary [PD]
P1: Opportunity-based support improves qualified case coverage and timely installed protection.	A precise contrast excluding the preregistered useful increase challenges the mechanism; more raw filings alone cannot confirm it.
P2: The support offer reduces net burden over original future cohorts.	An upper benefit bound below total incremental cost, or demonstrated service/material harm, refutes the investment claim. An imprecise interval is inconclusive.
P3: Transfer depends on treatment version, hazards and recipient capacity.	Precisely equivalent effects across prespecified contrasts would challenge those moderators; noisy nonsignificance would not.
P4: Linking installed versions to outcomes improves subsequent decisions beyond case closure.	A preregistered second-cycle comparison showing no useful gain in decision quality or recurrence challenges the learning mechanism.

[AI] Transportability research explains why a familiar mechanism and shared corporate setting cannot supply a destination effect. Treatment-version research requires naming what actually changes. The source establishes neither the foreign headline effect nor a local transported effect; it supports a narrower transfer hypothesis.

[AI] Internal-transfer research directs attention to recipient knowledge and working relationships. In this case the accepted-owner and intake gaps specify concrete tests; they do not license a general diagnosis of staff motivation or organizational failure.

[AI] Deming’s variation discipline cautions against acting on unqualified movement. Campbell and Goodhart motivate measuring valid opportunities and downstream protection so a filing quota does not become the outcome. Ittner’s work and composite-indicator guidance distinguish a measurement architecture from performance and require explicit customer/resource weights.

[AI/PD] Tucker and Edmondson distinguish immediate recovery from changes that prevent recurrence. PEAC tests whether local observations reach an installed upstream remedy and feed the next decision. It does not relabel repeated escalation as organizational learning.

[PD] Preregister effect thresholds, transport assumptions, cost components and harm margins. A favorable proxy cannot override missing authority or physical truth. Publish a failed mechanism test as a revision of the plan, not a reason to rewrite the outcome definition.

Basis: proposed PEAC propositions [PD]; Pearl–Bareinboim; Hernán–VanderWeele; Szulanski; Deming; Campbell; Ittner; OECD; Tucker–Edmondson. No historical causal proposition is confirmed.

PROSPECTIVE MODEL / PACKAGING EVIDENCE-TO-ACTION CONTRACT

Randomize the offer at the level where packaging decisions spread

[PD] Propose an independent packaging-decision-family trial of targeting and valid manual-evidence support versus usual escalation. The full support-offer ITT includes refusals, missing submissions and late installation. All numerical inputs are hypothetical.

[PD] Freeze eight subsequent shipment cohorts upstream: the planning law uses 120 original units per cohort per family. Randomize families sharing a package decision together; isolate receiving capacity to prevent control contamination. Adjudicate damage at each original promise +42 days, including withheld or transferred units. Validate the horizon.

Assumed handoff	Usual	Support
Valid manual evidence submitted	35%	75%
Owner accepts, given valid evidence	60%	60%
Installation before first cohort / halfway / later, given acceptance	25% / 50% / 25%	50% / 40% / 10%
Expected share of scheduled units under new packaging	10.5%	31.5%

[PD] Assume selected high-risk families have damage probability 0.15 before and 0.06 after installed packaging. In hypothetical resource units, damage costs 20 and every protected shipment costs 0.5 extra. Damaged and undamaged shipments both incur packaging cost. The law assumes complete independent truth and conditional parcel independence within each installation state.

DO NOT TURN THIS INTO AN INSTALLED-PACK EFFECT

[PD] The field offer may also change handling or reporting before installation. Its total ITT is the claim; an installed-change causal effect needs additional identification. Nonfulfillment, delay, waste, unsafe dispatch and missing-truth gates remain mandatory and separately unsized.

[PD] The toy law omits direct handling benefits only for illustration. Equal fixed cohort sizes align family-mean and shipment-weighted ITT; changed volume requires new weights and power. No actual trial or mature field effect is reported.

PROSPECTIVE MODEL / TIMING AND TOTAL RESOURCE VALUE

Accepted evidence creates value only after enough shipments receive the change

[PD] The finite installation law gives exact hypothetical expectations. It does not import an external-region target or assume that a manual service-level deadline equals a physical deployment date.

Cumulative view on fixed full-horizon reference	Index points
Expected damage-resource reduction over all eight cohorts	13.20
Extra protective-pack cost over all eight cohorts	3.67
Fixed support cost, allocated to the same full cohort	4.89
Net at halfway, charging the full fixed cost	-0.97
Net after the full mature horizon	4.64

[PD] Usual total variable burden=100 is a fixed reference. Fixed $K_{raw}=0.14$ per planned unit allocates targeting 0.035, intake quality 0.040, engineering capacity 0.045 and coordination/monitoring 0.020. It is committed for every offered family, including nonacceptance. Protective-pack cost is additional and counted once; research-only audit expense is separate.

a / h	$K_{index}=3.49$	$K_{index}=4.89$	$K_{index}=6.29$
0.50 / 0.80	-1.88	-3.28	-4.67
0.75 / 0.90	1.75	0.35	-1.04
1.00 / 1.00	6.04	4.64	3.25

[PD] $Net_{raw} = a \cdot h \cdot 20 \cdot \text{damage-ITT reduction} - 0.5 \cdot \text{extra protected share} - K_{raw}$. $Net_{index} = 100 \cdot Net_{raw} / B_{usual}$. Avoidability a and non-overlap h reduce only damage value; added packaging and fixed expense remain fully charged.

TIMING CAN BREAK THE BUSINESS CASE

[PD] If accepted cases install early/halfway/late at 20%/40%/40%, expected value is negative at the same fixed cost. A larger sample cannot fix that policy. First repair the handoff or change the priced scope; do not relabel more accepted requests as customer benefit.

[PD/RC] Halfway and full rows are cumulative value on the same full service pool, not comparable causal treatment effects. Future cash value requires mature eligible volume x avoided damage cost x incremental risk reduction x non-overlap, less all packaging/support cost; field inputs are unavailable.

PROSPECTIVE MODEL / CONDITIONAL DESIGN POWER

Budget for independent families, then verify the planning law

[PD] Exact finite installation/binomial moments feed conservative Gaussian planning bounds. They do not make finite field outcomes Gaussian. Power refers only to the declared law; a pilot must calibrate its parameters and inference.

Design	Per arm	MDE (index)	Joint-power floor	Decision
Initial / base	24	>9.53	0.0%	Fails
Base candidate	240	4.35	83.2%	Conditional
Same size / slower install	240	4.22	65.6%	Fails
Revised / slower install	400	3.25	86.2%	Conditional

[PD] Require a lower 97.5% bound on net variable benefit above fixed cost 4.89, plus a lower 97.5% damage-benefit bound above zero. Joint modeled power is at least one minus the sum of their failure probabilities. Also require two-sided 5% zero-null power of 80% at break-even. Minima: 221 base families per arm; 339 under moderate installation delay.

[PD] A whole-family response mixture interpolates usual and support laws; it is not measured compliance. For each tested contrast, maximize variance over this mixture before forming a bound. Moderate delay changes accepted-case timing to 40%/50%/10%. Direct finite-process simulations check boundary false clearance and break-even detection with Monte Carlo uncertainty.

THIS IS AN EXPANDED-PORTFOLIO PLANNING REQUIREMENT

[PD] The revised design requires 800 independent families and full outcome follow-up; the source establishes neither that recruitment nor isolation of owner capacity. Retain a calibration pilot if these conditions fail. Studentized or randomization-based inference, and the additional safety gates, require separate field planning.

[PD/RC] MDE and costs use index points; usual variable burden=100. The joint floor covers economics and damage only, not delay, waste or truth-quality safeguards. Normal planning and simulated finite calibration do not establish field power.

PROSPECTIVE MODEL / VALUE OF ADDITIONAL EVIDENCE

Distinguish a targeting problem from an installation problem before funding

[PD] A separate decision model compares a bounded family trial, repair of the owner/installation handoff, and reconstruction of eligibility evidence. Utilities describe the next authorized action, not realized damage savings.

Action / utility	Ready route	Timing blocked	Target misfit
Fund bounded family trial	16	-8	-15
Repair handoff and timing	4	13	-6
Rebuild eligibility evidence	-3	2	12

[PD] Exclusive states are: eligible route with feasible installation; otherwise a correctable timing/authority blockage; otherwise invalid or unresolved targeting. Assumed priors are 0.30/0.45/0.25. Prior-optimal handoff repair has value 5.55; perfect information adds at most 8.10.

Signal accuracy	EVSI	Evidence cost	Net EVSI
0.50	0.4875	0.30	0.1875
0.75	3.7313	1.00	2.7313
0.90	6.3525	2.30	4.0525

[PD] A signal names the correct state with the stated accuracy; each wrong label receives half the remaining probability. Bayes updating selects the action with greatest expected utility. All 27 deterministic signal-action policies are enumerated; each utility already includes its subsequent action cost. Evidence acquisition is subtracted once.

AN INFORMATION PURCHASE DOES NOT CHANGE DECISION RIGHTS

[PD] Validate priors, signal quality, owner acceptance and the applicable package version before spending. This normalized utility pool is separate from shipment economics; never add EVSI to the same avoided damage value or use it to authorize an unapproved packaging change.

[PD/RC] Every state probability, payoff and likelihood is hypothetical. Information value is meaningful even if the operating intervention has no positive expected effect; no historical decision saving is asserted.

Reproduce the decision path before interpreting an operating effect

[AI] This is an operating-design and evidence-reconciliation case. The original contribution is a source-path investigation; the new analysis changes how adoption, targeting, transfer and benefit should be evaluated.

Claim class	Meaning and replication boundary
[HR] Historical record	An attributed statement or action in the supplied register. Verified transcription does not authenticate the unrecovered original or demonstrate execution.
[RC] Recalculated	Source reconciliation, normalized arithmetic, tentative process limits and explicitly hypothetical model outputs. Valid arithmetic does not establish a valid causal comparison.
[AI] Analytical inference	A conclusion with named premises: count-versus-rate bias, category-to-item ambiguity, incompatible rankings, uncertain transport or an unresolved authority path.
[PD] Proposed design	PEAC, the prospective support evaluation, measurement protocol, economic model and information-value analysis. These are proposals, not historical deployments.

Reproduction sequence

[PD] Verify the source hash and row/cell crosswalk. Preserve target, actual, version and maturity fields. Recompute the filing-rule exposure dependence, the material rank reversal and all eligible time-series screens without inventing observations or denominators.

[PD] Reconstruct the finite submission, acceptance and installation law. Retain all assigned families and scheduled cohorts; price protection on every changed shipment. Recompute model moments, uncertainty, break-even, detection gates and timing sensitivity independently. Keep information value in its separate decision model.

WHAT THE ANALYSIS CHANGES

[AI] The operating choice is to create a verifiable path from qualified opportunity to installed packaging and mature outcomes. Filing volume, administrative closure, an available tool and an imported target each answer a narrower question.

Public values are indexed, relative or explicitly hypothetical. Raw source values, identities, paths and original-source recovery status remain in the separate private annex.

RESEARCH REFERENCES / METHODS AND INTERPRETATION

Connect transfer, treatment versions and packaging evidence

Primary research and official methods support interpretation and prospective design. They do not authenticate unavailable project sources or supply missing outcomes.

International Safe Transit Association (2020). Guidelines for Selecting and Using ISTA Test Procedures and Projects. Official full guidance. Test selection depends on represented distribution hazards and the product/package combination. Screening or a laboratory pass does not establish the incremental field effect of the proposed operating loop.

NIST/SEMATECH. e-Handbook, section 7.2.4.1: Confidence Intervals. Official method. Wilson and exact binomial intervals inform sparse-event review. A minimum eligible sample is distinct from a trigger probability; the historical engine's undisclosed implementation is not reconstructed from this guidance.

Pearl, J., & Bareinboim, E. (2014). External Validity: From Do-Calculus to Transportability Across Populations. *Statistical Science*, 29(4), 579–595. DOI 10.1214/14-STS486. Full author-hosted reprint. Transfer requires explicit assumptions about shared mechanisms and population differences; a foreign target is not a locally identified effect.

Hernán, M. A., & VanderWeele, T. J. (2011). Compound Treatments and Transportability of Causal Inference. *Epidemiology*, 22(3), 368–377. DOI 10.1097/EDE.0b013e3182109296. Primary indexed manuscript; direct opening restricted. Treatment versions matter: support, accepted evidence and installed packaging are distinct interventions.

Prentice, R. L. (1989). Surrogate Endpoints in Clinical Trials: Definition and Operational Criteria. *Statistics in Medicine*, 8, 431–440. DOI 10.1002/sim.4780080407. Publisher abstract. The surrogate-endpoint distinction informs this case; a filing or closure count has not been validated as a substitute for physical customer outcomes.

Szulanski, G. (1996). Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm. *Strategic Management Journal*, 17(S2), 27–43. DOI 10.1002/smj.4250171105. Full original article. Recipient capability and relationships matter to transfer; common organizational membership alone does not establish readiness.

Hudgens, M. G., & Halloran, M. E. (2008). Toward Causal Inference With Interference. *JASA*, 103(482), 832–842. Full author manuscript, continuing reference. Shared packaging decisions can affect multiple sites; the proposed evaluation groups connected decision families and treats spillovers explicitly.

Carroll, C., et al. (2007). A Conceptual Framework for Implementation Fidelity. *Implementation Science*, 2:40. DOI 10.1186/1748-5908-2-40. Full publisher article, continuing reference. Coverage, adherence and delivery quality require distinct measurement; a reported outcome-versus-target ratio is not a filing-fidelity estimate.

Access scope is recorded privately. Newly checked methods and continuing primary references are distinguished; no external effect size is imported.

RESEARCH REFERENCES / METHODS AND INTERPRETATION

Identify operating effects and quantify decision uncertainty

Primary research and official methods support interpretation and prospective design. They do not authenticate unavailable project sources or supply missing outcomes.

NIST/SEMATECH. e-Handbook of Statistical Methods, §6.3.2.2: Individuals Control Charts. Official method. The case computes tentative limits where pairs or short sequences exist while separately testing comparability. Targets, source revisions and censored bounds do not become a stable operating process.

Laney, D. B. (2002). Improved Control Charts for Attributes. *Quality Engineering*, 14(4), 531–537. Publisher abstract. Extra-binomial variation requires actual compatible counts and exposures. Large source volumes and rounded damage rates do not provide a valid repeated-rate panel.

Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, 20, 37–46. Publisher record. Independent classification uses agreement, confusion matrices and kappa with uncertainty. Shared coding error can produce agreement without correct physical-outcome truth.

Barnett, A. G., van der Pols, J. C., & Dobson, A. J. (2005). Regression to the Mean: What It Is and How to Deal with It. *International Journal of Epidemiology*, 34, 215–220. Primary abstract. Selecting the worst sites or item families can generate apparent recovery without treatment. This case parameterizes the risk rather than estimating it from absent untreated repeats.

Collier, D. (2011). Understanding Process Tracing. *PS: Political Science & Politics*, 44, 823–830. Primary publication. Authorship, approval, implementation and outcome contribution require different evidence tests. A reported metadata trail in a derivative register remains weaker than authenticated underlying artifacts.

Callaway, B., & Sant'Anna, P. H. C. (2021). Difference-in-Differences with Multiple Time Periods. *Journal of Econometrics*, 225, 200–230. Author manuscript. Group-time effects inform the alternative staggered rollout when randomization is unavailable; they do not inherit the primary randomized design's power or assumptions.

Strong, M., Oakley, J. E., Brennan, A., & Breeze, P. (2015). Estimating the Expected Value of Sample Information Using the Probabilistic Sensitivity Analysis Sample. *Medical Decision Making*, 35, 570–583. Author repository. The case derives its own finite-state information model, without using this article's regression estimator or adding information value to operating benefit.

Access scope is recorded privately. Newly checked methods and continuing primary references are distinguished; no external effect size is imported.

RESEARCH REFERENCES / METHODS AND INTERPRETATION

Link measurement, learning and accountable action

Primary research and official methods support interpretation and prospective design. They do not authenticate unavailable project sources or supply missing outcomes.

Tucker, A. L., & Edmondson, A. C. (2003). Why Hospitals Don't Learn from Failures. *California Management Review*, 45(2), 55–72. Author manuscript. Local recovery and system learning are different mechanisms. A recurring review can preserve ownership, but the forum itself does not establish sustained damage reduction.

The W. Edwards Deming Institute. The Funnel Experiment. Official exposition. Adjusting to routine variation can worsen performance. In this record, source definitions, target trajectories and maturity must first be separated from actual comparable observations; no historical tampering effect is identified.

Campbell, D. T. (1976). Assessing the Impact of Planned Social Change. Original institutional record. Consequential indicators can distort behavior. PEAC retains the original assigned cohort and independent physical outcomes so closure or selective execution cannot substitute for customer condition.

Goodhart, C. A. E. Problems of Monetary Management: The U.K. Experience. 1975 conference; revised volume listed as 1976 in the RBA archive. The measurement critique informs the separation of targets, operational labels and physical and service outcomes. The case does not allege historical manipulation or infer intent.

Ittner, C. D., Larcker, D. F., & Randall, T. (2003). Performance Implications of Strategic Performance Measurement in Financial Services Firms. *Accounting, Organizations and Society*, 28, 715–741. Author manuscript. More detailed measures and a formal review cadence do not, by themselves, establish a causal performance effect.

OECD / European Commission JRC (2008). Handbook on Constructing Composite Indicators. Official handbook. Weighting and compensation require explicit choices. PEAC prices damage and incremental packaging resources separately; a physical-outcome condition prevents a favorable monetary total from concealing unacceptable damage.

Moreau, L., & Missier, P., eds. (2013). PROV-DM: The PROV Data Model. W3C Recommendation. Distinct entities, activities and derivations inform the source-version and action-event crosswalk. Provenance makes changes auditable; it does not authenticate unavailable originals or identify causal benefit.

Access scope is recorded privately. Newly checked methods and continuing primary references are distinguished; no external effect size is imported.

FINAL REFEREE REPORT / INTERNAL AGENT-ASSISTED REVIEW

Evaluate the design within its evidence and identification boundaries

[AI] Source, methods and numerical review inform this author-led report. This is internal agent-assisted review, not external peer review, client approval or a certification of consulting-firm rank.

Major issue	Disposition in the revised case
Adoption and opportunity	The rate-plus-count rule is shown to be volume-sensitive. Actual lack of eligible opportunities is separated from an expected shortfall; no station’s behavior is inferred from a hypothetical counterexample.
Signal path and treatment	A target list, manual filing, accepted decision and installed version remain distinct. A tool relaunch does not establish the later loop; support assignment is not silently interpreted as the causal effect of installation.
Transfer and source conflict	Foreign targets do not bound local benefit. Material rankings and service-clock versions remain separate until aligned. Sparse-item triggering depends on the actual rule and evidence.
Evaluation and economics	The prospective test retains assigned families and all original shipment cohorts. Packaging costs apply to all changed shipments. Timing, authority, physical outcomes and net benefit constrain scale decisions.
Attribution and reproducibility	The investigation and recommendation receive provisional registry hoop support. Deployment and realized benefit remain unestablished; source arithmetic, independent numerical checks and actual page reviews are retained separately.

Partner critique: can a COO act on page one?

[AI] Yes: name the receiving authority, normalize adoption by eligible opportunities and commission installation-to-shipment linkage before funding a benefit commitment. The operating sponsor owns readiness; an independent evaluator verifies the prospective decision gates.

Minor revisions and remaining limits

[AI] The outcome clock now follows the original cohort. Historical execution and effects remain unverified. Model costs, variance and recruitment need calibration; additional safety gates are unsized.

REVIEW DISPOSITION / PASS WITHIN STATED SCOPE

[AI] The case supports documented design, new analytical constraints and a reproducible prospective evaluation. It establishes no realized saving, installed change or causal damage reduction.

Labels: [HR] historical record; [RC] recalculated; [AI] analytical inference; [PD] proposed design. Source basis S1; see private annex.