

HOW TO **OPTIMIZE UNIT ECONOMICS** TO PROVE A SCALE-WORTHY MODEL

Growth Acceleration & Unit Economics

WHERE THIS IS USED

- Venture Studio ventures entering scale
- CVC portfolio companies post first tranche
- Corporate venture-client growth programs
- Foundry-as-a-Service engagements

AUDIENCE

- EIR / General Manager
- Finance Lead / CFO
- Executive Sponsor
- Venture Board / IC members

PHASE

Phase Four: Scale & Optimize
Section I — Growth Acceleration & Unit Economics
Follows Phase Three (Build & Launch)

EXECUTIVE SUMMARY

In Phase Two, the unit economics were modeled. Guide C1 produced CAC, LTV, contribution margin, and payback as assumptions in a spreadsheet — defensible, stress-tested, but hypothetical. At scale, those numbers stop being assumptions and become measurements. The question is no longer “do the economics work on paper?” but “do the economics work in the actuals, across real customers, at volume?”

This guide moves the venture from modeled economics to proven economics. It replaces every C1 assumption with observed data, calculates the core metrics from actual customer cohorts rather than a model, analyzes them by cohort and by channel so that blended averages cannot hide unprofitable segments, and tests the result against an explicit scale-worthy bar that must be cleared before follow-on capital is requested.

The four outputs of this guide are: an actuals-based unit-economics model reconciled to the C2 financials; a cohort analysis that shows how retention and margin behave over time and differ by segment and channel; a documented scale-worthy verdict against a pre-set bar; and a profitable-growth path that names which segments and channels to scale, which to fix, and which to cut. Together they are the economics evidence the Investment Committee requires in Guide J1.



THE CORE PROBLEM

The most expensive mistake in the scale phase is pouring capital into a motion whose economics have never been proven with real data. A model that works in a spreadsheet can lose money on every customer in reality, and scale does not fix that — it multiplies it. Growth on top of broken unit economics is the fastest way to convert a promising venture into a large, confident loss.

The failure is rarely a lack of numbers. It is that the numbers are modeled, blended, and optimistic, when they need to be measured, disaggregated, and conservative before anyone commits capital to scale.

The six most consistent failure patterns in scale-phase unit economics:

- **Modeled, not measured.** The C1 assumptions were never replaced with actuals. The venture is still reporting the economics it hoped for, not the economics it has.
- **Blended averages hide the truth.** A single blended CAC and LTV masks the reality that some channels and segments are deeply profitable and others lose money on every customer.
- **Inflated LTV.** Lifetime value is calculated on optimistic churn and customer-lifespan assumptions that the early cohorts do not support, making the model look healthier than it is.
- **Payback ignored.** Growth is funded without knowing how many months it takes a customer to pay back their acquisition cost. A long payback silently consumes runway even when the business looks like it is growing.
- **Unknown contribution margin.** Revenue growth is celebrated while the margin on each unit of that revenue is unknown — or negative. Top-line growth on negative contribution margin is not progress.
- **Scaling before proof.** Capital is deployed to accelerate a motion whose economics have not cleared any explicit bar, on the assumption that scale will improve them. Sometimes it does; betting the tranche on it is not a strategy.

The real issue:

The follow-on capital decision in Guide J1 underwrites a model that improves with scale, not one that loses more with every customer added. If the unit economics have not been proven scale-worthy against an explicit bar, follow-on capital does not fund growth — it funds faster losses. Proving the economics is therefore not a finance exercise; it is the precondition for being allowed to scale at all.

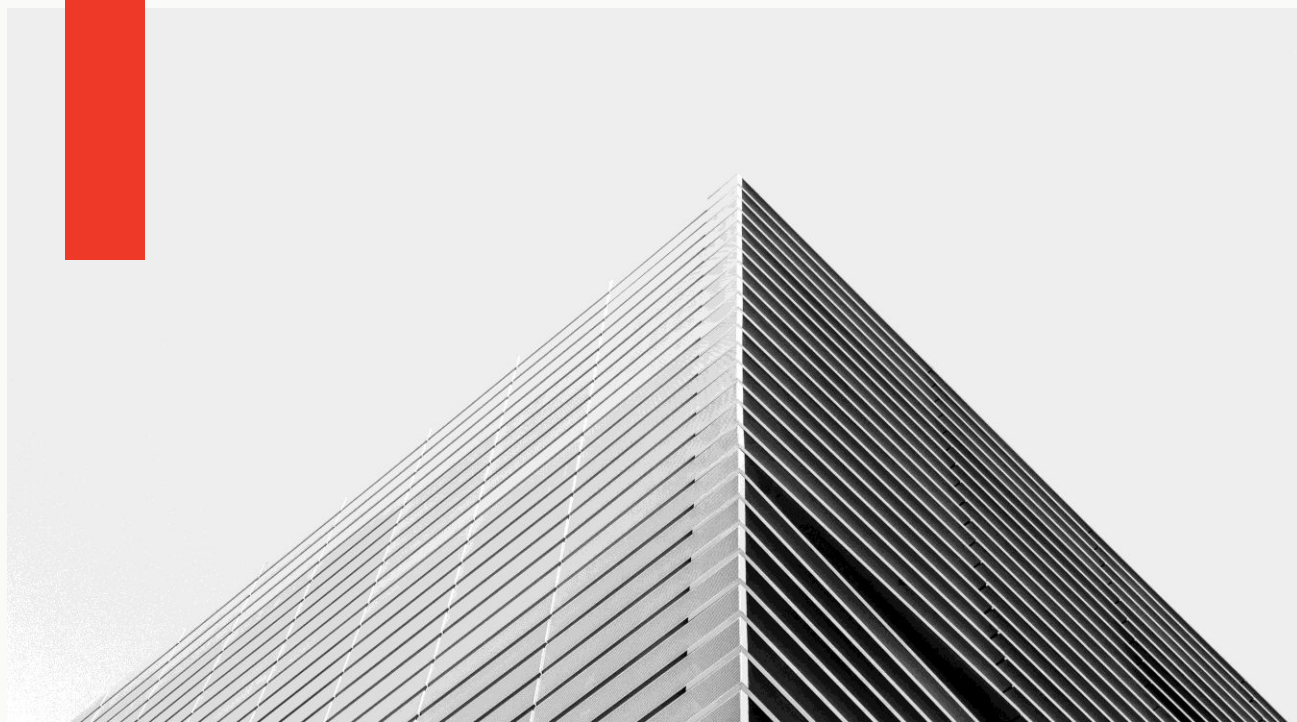
PREREQUISITES

Must Be Complete Before Starting:

- **Guide C1 completed** — baseline unit economics modeled: CAC, LTV, contribution margin, LTV:CAC, and payback with base, pessimistic, and optimistic scenarios
- **Guide C2 completed and current** — the financial model, burn rate, and runway are up to date and reconcile to actuals
- **Guide I1 completed** — the channel scorecard exists, so cost of acquisition can be disaggregated by channel rather than blended
- **Sufficient volume to measure** — enough customers and at least two to three time-separated cohorts to observe retention and margin behavior rather than assume it

Team Readiness:

- Finance Lead confirmed and available to own the actuals-based model
- Billing, revenue, and cost data accessible and reconciled to the C2 model — no unexplained gaps between systems
- Metric definitions agreed and recorded so CAC, LTV, contribution margin, and payback mean the same thing here, in C2, and on the H2 dashboard
- For CVC tracks: the Close Owner has confirmed which economics metrics flow into the PMS and how NAV and IRR inputs reconcile to them



EXPECTED OUTPUT/ SUCCESS CRITERIA

You have completed this guide when the following are true:

- ✓ An actuals-based unit-economics model — CAC, LTV, contribution margin, LTV:CAC, and payback calculated from observed data, replacing the C1 assumptions
- ✓ A cohort analysis showing retention and contribution-margin curves over time, cut by segment and by channel
- ✓ The scale-worthy bar defined in advance and a pass, hold, or fail verdict recorded against each dimension
- ✓ A documented profitable-growth path: which segments and channels to scale, which to fix, and which to cut
- ✓ The model reconciled to the C2 financials and the H2 dashboard — one definition, one source, no divergence
- ✓ The unit-economics evidence assembled for Guide J1, including the single sensitivity the Investment Committee is most likely to test



STEP-BY-STEP INSTRUCTIONS

STEP 1

REPLACE MODELED ASSUMPTIONS WITH ACTUALS

The first task is to retire the C1 model as the source of truth and rebuild every metric from observed data. This is not a refinement of the assumptions — it is a replacement of assumptions with measurements. Where actuals are not yet available for a given input, that gap is flagged explicitly rather than filled with the old assumption.

- 1.1 Inventory every C1 assumption** — List each assumption behind the C1 economics: acquisition cost, conversion rates, price realized, churn, customer lifespan, gross margin, and cost to serve. Each becomes a line item to be replaced with an actual.
- 1.2 Pull the actuals from billing, revenue, and cost systems** — For each assumption, extract the observed value from the systems of record over a defined measurement window. Reconcile the totals to the C2 financial model so the unit economics and the financials cannot tell two different stories.
- 1.3 Flag every input still running on assumption** — Any input for which there is not yet enough data — customer lifespan is the common one — is marked as modeled, not measured, and treated conservatively. Honesty about what is still assumed is what makes the rest of the model credible.

AI PROMPT — Assumptions-to-Actuals Reconciliation

I am replacing the modeled unit economics from Guide C1 with actuals for a scaling venture. Here are the C1 assumptions: [paste acquisition cost, conversion, price, churn, lifespan, gross margin, cost to serve]. Here are the observed actuals from our billing, revenue, and cost systems over [window]: [paste]. Build a reconciliation table showing assumption versus actual for each input, the variance, and a plain-language note on why each differs. Flag every input for which the data window is too short to trust, and recommend a conservative treatment for each of those.



STEP 2 CALCULATE THE CORE METRICS AT VOLUME

With actuals in hand, recalculate the four metrics that decide whether the model is scale-worthy. Calculate each from data, disaggregate it so no unprofitable segment can hide inside a blended average, and record the definition alongside the number so it is unambiguous in the board pack and the J1 memo.

Metric	Definition (Actuals-Based)	What Good Looks Like At Scale
CAC	Fully loaded acquisition cost per new customer, by channel, including operator time and tooling	Falling or stable as volume grows; lowest in scalable channels
Contribution margin	Revenue per customer minus variable cost to serve, per period	Positive and improving with scale; the precondition for everything else
LTV	Contribution margin times observed customer lifespan, using measured retention	Grounded in real retention, not optimistic lifespan; conservative until cohorts mature
LTV:CAC	Lifetime value divided by fully loaded CAC	At or above the pre-set bar in the channels you intend to scale
Payback	Months for cumulative contribution margin to recover CAC	Short enough that growth does not outrun runway

2.1 Disaggregate every metric by channel and segment — Recalculate each metric per channel using the I1 scorecard and per customer segment. A healthy blended number that hides an unprofitable channel is worse than a mediocre number you understand.

2.2 Use conservative retention until cohorts mature — Do not annualize LTV on the retention of a three-month-old cohort. Use the retention you have actually observed and state the assumption for the tail explicitly.

AI PROMPT — Unit-Economics Calculation and Disaggregation

I am calculating unit economics from actuals for a scaling venture. Data by channel and segment: acquisition spend, operator hours, new customers, revenue per customer, variable cost to serve, and observed retention by cohort: [paste]. Calculate fully loaded CAC, contribution margin, LTV using measured retention, LTV:CAC, and payback — both blended and disaggregated by channel and segment. Highlight any channel or segment where contribution margin is negative or payback exceeds [threshold], and show how much the blended number is being flattered by the healthiest segment.

STEP 3 RUN THE COHORT ANALYSIS

Point-in-time metrics describe a snapshot; cohorts describe a trajectory. Grouping customers by the period they were acquired and following each group over time reveals whether retention and margin are improving, flat, or decaying — which is the difference between a model that gets better with scale and one that quietly gets worse.

- 3.1 Build retention curves by cohort** — For each acquisition cohort, plot the share still active and the revenue retained over successive periods. Later cohorts retaining better than earlier ones is direct evidence that the product and onboarding are improving — exactly the signal J1 rewards.
- 3.2 Build contribution-margin curves by cohort** — Track cumulative contribution margin per cohort against the CAC that acquired it. The period at which the curve crosses zero is the real payback; the slope after that is the value the cohort creates.
- 3.3 Cut cohorts by channel and segment** — Overlay the channel and segment cuts. Cohorts sourced from different channels frequently retain and monetize very differently — this is where the profitable-growth path in Step 5 comes from.

Note: Cohort curves are also the input the H2 dashboard and Guide J1 memo use to show that the model improves with scale. Produce them in the investment-ready form once, then reuse: a retention curve, a cumulative-margin-versus-CAC curve, and the same curves split by channel.

STEP 4 DEFINE AND APPLY THE SCALE-WORTHY BAR

“Good enough to scale” must be a number set before the results are examined, not a judgment made afterward to justify a decision already taken. Define the bar for each dimension, then apply it and record the verdict. A model that fails the bar is not scaled — it is fixed first.

Dimension	Illustrative Bar	Why It Matters	Verdict
LTV:CAC	At or above target in scale channels	Below the bar, every acquired customer destroys value	Pass / Hold / Fail
Payback	Within a runway-safe window	A long payback consumes the capital that growth is supposed to build	Pass / Hold / Fail
Contribution margin	Positive and trending up	Negative margin means scale multiplies losses	Pass / Hold / Fail
Retention	Stable or improving by cohort	Decaying retention invalidates the LTV the model depends on	Pass / Hold / Fail

- 4.1 **Set the bar with the Finance Lead and Executive Sponsor before results are reviewed** — The thresholds are agreed and written down first. This removes the temptation to move the goalposts once the numbers are in, and it gives the Investment Committee confidence that the verdict is honest.
- 4.2 **Record a verdict per dimension, not one overall grade** — A model can pass on margin and fail on payback. The disaggregated verdict tells you exactly what to fix, which a single overall grade hides.

AI PROMPT — Scale-Worthy Bar and Verdict

I am setting a scale-worthy bar for a venture's unit economics before reviewing the full results. Our C2 runway and target return context is: [describe]. Propose defensible thresholds for LTV:CAC, payback, contribution margin, and cohort retention appropriate to this context, with the reasoning for each. Then, given our measured results [paste], apply the bar and return a pass, hold, or fail verdict per dimension, plus the one dimension whose failure would most concern an Investment Committee.

STEP 5 IDENTIFY THE PROFITABLE-GROWTH PATH

The disaggregated economics point directly at where growth should and should not go. The profitable-growth path names, for every segment-and-channel combination, whether to scale it, fix it, or cut it — turning the analysis into an instruction the I3 roadmap can sequence.

- 5.1 **Classify every segment-and-channel combination** — Scale the combinations that clear the bar and have headroom. Fix the ones with a clear, addressable margin or payback problem. Cut the ones that lose money with no credible path to positive contribution margin.
- 5.2 **Name the margin levers for the fix cases** — For each fix case, identify the specific lever: pricing, cost to serve, onboarding to improve retention, or channel cost. A fix without a named lever is a hope, not a plan.

Segment × Channel	Contribution Margin	Payback	Decision	Lever / Rationale
[Segment A × Channel A]	Positive, rising	Short	Scale	Clears the bar with headroom
[Segment B × Channel B]	Thin	Long	Fix	Raise price or cut cost to serve
[Segment C × Channel C]	Negative	None	Cut	No credible path to positive margin

AI PROMPT — Profitable-Growth Path

I am defining the profitable-growth path for a scaling venture from its disaggregated unit economics. Here are contribution margin, payback, and retention by segment and channel: [paste]. Classify each combination as scale, fix, or cut against our scale-worthy bar. For every fix case, name the single highest-impact lever (pricing, cost to serve, retention, or channel cost) and estimate its effect on payback and LTV:CAC. Summarize the path as a short instruction the I3 scaling roadmap can sequence.

STEP 6**RECONCILE TO THE FINANCIAL MODEL AND DASHBOARD**

Unit economics that do not tie back to the company's financials are not trusted, and rightly so. Reconcile the actuals-based model to the C2 financials and feed the agreed metrics to the H2 dashboard so the growth review, the board pack, and the capital memo all draw on one source.

- 6.1 Reconcile to the C2 model and runway** — Confirm that the volumes, revenue, and costs in the unit-economics model roll up to the same totals as the C2 financial model, and that the implied burn and runway match. Any divergence is resolved before the model is used for a capital decision.
- 6.2 Feed the metrics to the H2 dashboard** — Add CAC, contribution margin, LTV:CAC, and payback to the Financial Health category of the H2 dashboard with agreed definitions and update owners, so the numbers are live rather than assembled at quarter-end.
- 6.3 Run the sensitivity the Investment Committee will run** — Stress the model on the two inputs most likely to be questioned — usually retention and CAC — and record the effect on LTV:CAC and payback. Bringing the sensitivity to J1 unprompted is far stronger than being asked for it.

STEP 7**PACKAGE THE ECONOMICS EVIDENCE FOR FOLLOW-ON CAPITAL**

The final step compresses the analysis into the evidence Guide J1 needs: proof that the model is measured not modeled, positive not negative at the unit level, improving not decaying by cohort, and clear about where profitable growth lives.

- 7.1 Assemble the economics evidence package** — The package is the actuals-based model, the cohort curves, the scale-worthy verdict, the profitable-growth path, and the C2 reconciliation with sensitivity. It is short and defensible, not a deck.

7.2

Apply the dual-track split for CVC portfolio companies — For a Venture Studio build-and-launch venture, the Finance Lead maintains the model and it flows through the EIR to the Venture Board. For an independent CVC portfolio company, the portfolio company's finance function maintains the operational economics and the Close Owner reconciles them into the PMS, where they inform the IRR and NAV inputs the Investment Committee sees. The scale-worthy bar is identical across both; only the reporting path and the fair-value linkage differ, and the split should already be recorded in the H1 Expectations Alignment Record.

AI PROMPT — Economics Evidence Package for Follow-On Capital

I am assembling the unit-economics evidence for a follow-on capital request under Guide J1. Inputs: actuals-based model, cohort retention and margin curves, scale-worthy verdict by dimension, profitable-growth path, and C2 reconciliation with sensitivity: [paste]. Draft a one-page economics summary that shows, with numbers, that the model is measured, unit-positive, improving by cohort, and clear about where profitable growth lives. State the single sensitivity most likely to be challenged and the evidence that answers it.



TROUBLESHOOTING

Symptom	Likely Cause	Fix
Blended economics look healthy but the business keeps losing money	A profitable segment is masking one or more unprofitable channels or segments	Disaggregate every metric per Step 2.1 by channel and segment. Apply the Step 5 scale/fix/cut classification and cut the loss-making combinations before scaling.
LTV looks strong but cash keeps running short	LTV is high while payback is long; value is real but arrives too slowly for the runway	Report payback alongside LTV per Step 2 and Step 4. If payback exceeds the runway-safe window, prioritize payback-shortening levers before scaling spend.
The unit-economics model and the C2 financials disagree	The model was built on a separate data pull and never reconciled	Run Step 6.1. Roll the unit-economics volumes, revenue, and costs up to the C2 totals and resolve every divergence before using the model for a capital decision.
LTV keeps dropping every time it is recalculated	Early LTV was annualized on an immature cohort's optimistic retention	Use only observed retention per Step 2.2 and state the tail assumption explicitly. Stop annualizing young cohorts; let the cohort curves in Step 3 set the retention.
The team debates whether the economics are good enough to scale	No scale-worthy bar was set in advance	Set the bar with the Finance Lead and Executive Sponsor per Step 4.1 before reviewing results, then apply it. The debate is a symptom of a missing threshold, not a missing opinion.
Contribution margin is positive on paper but negative once support costs are added	Cost to serve was understated or excluded from the margin calculation	Include full variable cost to serve in contribution margin per the Step 2 definition. Reconcile to C2 costs so nothing is left out.
The Investment Committee asks for a sensitivity the team has not run	The model was presented as a point estimate with no stress test	Run the Step 6.3 sensitivity on retention and CAC before J1 and bring it unprompted. A point estimate invites the exact question the sensitivity would have answered.

VALIDATION STEPS

Confirm each of the following before declaring the unit economics proven scale-worthy:

Every C1 assumption has been replaced with an actual, or explicitly flagged as still modeled and treated conservatively



CAC, contribution margin, LTV, LTV:CAC, and payback are calculated from actuals and disaggregated by channel and segment



Retention and margin cohort curves are built and cut by channel and segment



The scale-worthy bar was set before the results were reviewed and a verdict is recorded per dimension



The profitable-growth path classifies every segment-and-channel combination as scale, fix, or cut, with a named lever for each fix



The model reconciles to the C2 financials and the implied burn and runway match



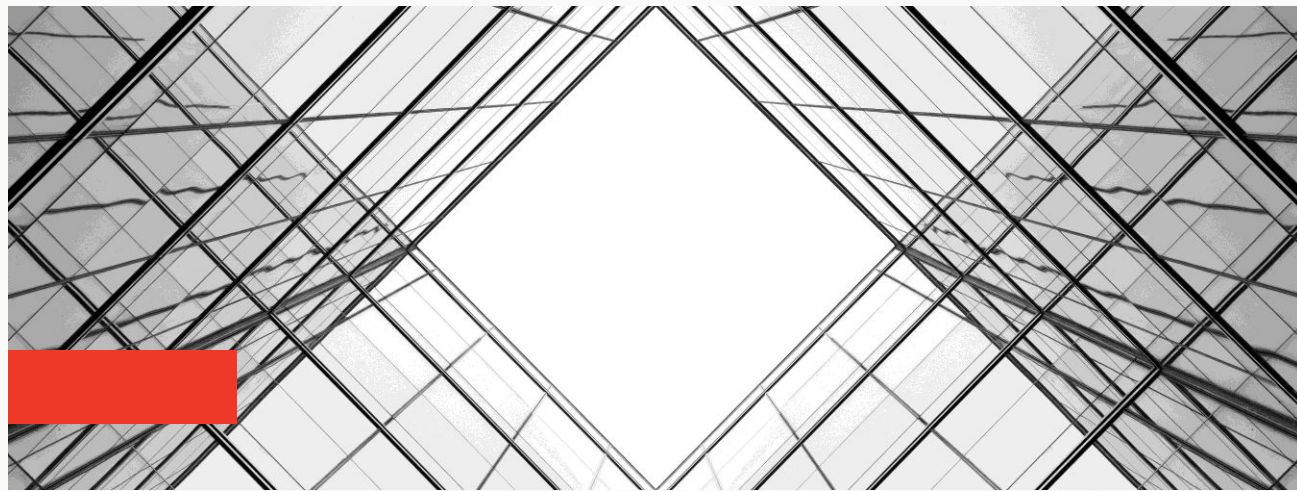
CAC, contribution margin, LTV:CAC, and payback are live on the H2 dashboard with agreed definitions



The sensitivity on retention and CAC has been run and its effect on LTV:CAC and payback recorded



The economics evidence package is assembled; for CVC tracks, the PMS reconciliation and fair-value linkage are confirmed

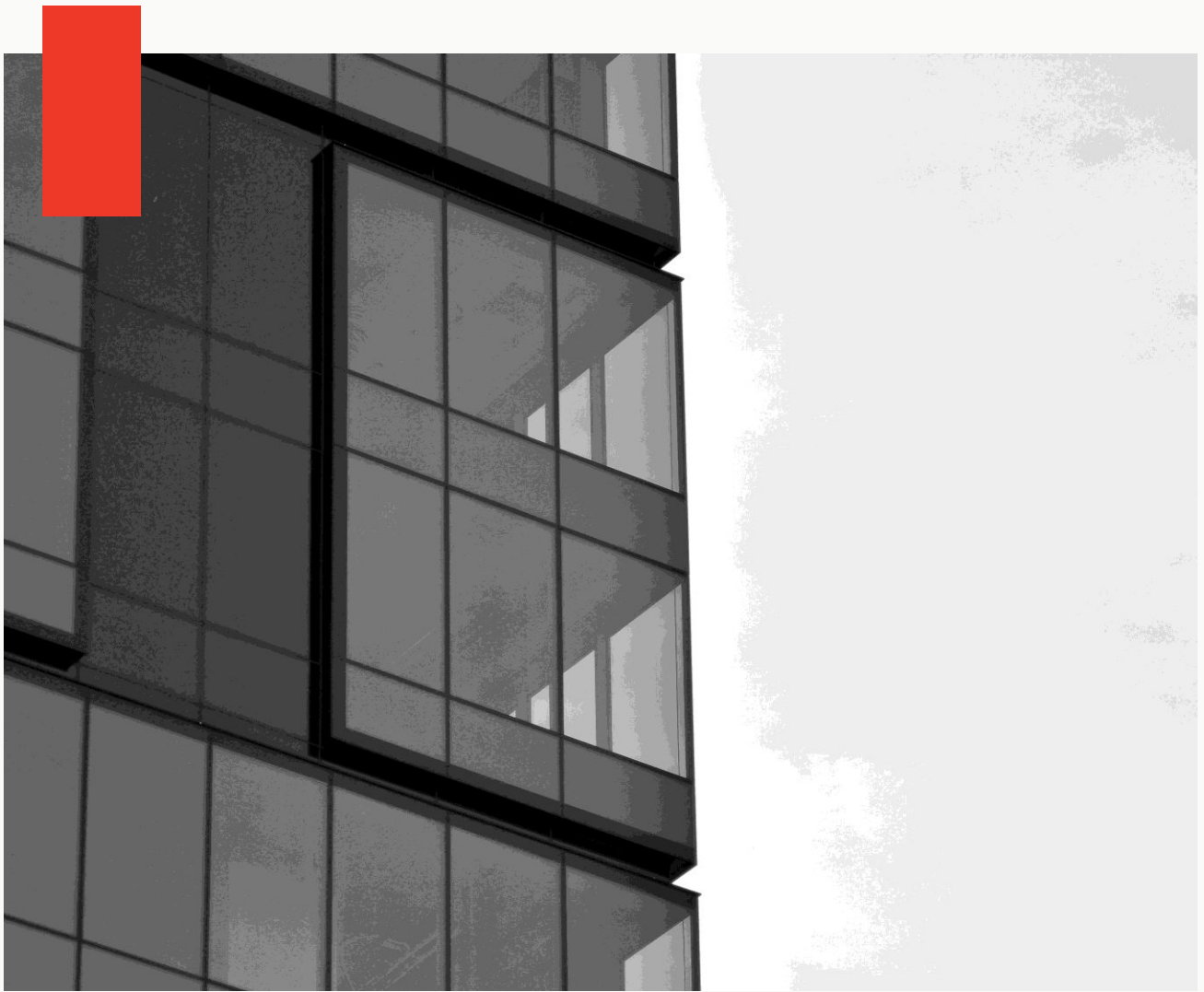


NEXT STEPS

With the economics proven and the profitable-growth path defined, proceed to Guide I3 to build the scaling roadmap and capacity plan. The scale, fix, and cut decisions from this guide are the raw material the roadmap sequences.

Keep the actuals-based model live on the H2 dashboard. Unit economics decay silently; a model that was scale-worthy last quarter must be re-tested as cohorts mature and channels saturate.

The economics evidence package assembled in Step 7 is a primary input to Guide J1. Paired with the growth evidence from Guide I1 and the roadmap from Guide I3, it forms the core of the follow-on capital case.



MASTER CHECKLIST

A. ACTUALS REPLACE ASSUMPTIONS

- ☐ Every C1 assumption inventoried as a line item to be replaced
- ☐ Actuals pulled from billing, revenue, and cost systems over a defined window
- ☐ Totals reconciled to the C2 financial model
- ☐ Inputs still on assumption flagged and treated conservatively

B. CORE METRICS AT VOLUME

- ☐ CAC, contribution margin, LTV, LTV:CAC, and payback calculated from actuals
- ☐ Every metric disaggregated by channel and segment
- ☐ LTV grounded in observed retention, not annualized on immature cohorts
- ☐ Metric definitions recorded alongside the numbers

C. COHORT ANALYSIS

- ☐ Retention curves built by cohort
- ☐ Cumulative contribution-margin-versus-CAC curves built by cohort
- ☐ Curves cut by channel and segment
- ☐ Investment-ready cohort visuals produced once for reuse

D. SCALE-WORTHY BAR

- ☐ Bar set with Finance Lead and Executive Sponsor before results reviewed
- ☐ Thresholds recorded for LTV:CAC, payback, contribution margin, and retention
- ☐ Verdict recorded per dimension, not as a single overall grade

E. PROFITABLE-GROWTH PATH

- ☐ Every segment-and-channel combination classified scale, fix, or cut
- ☐ A named margin lever assigned to each fix case
- ☐ Loss-making combinations with no path to positive margin marked to cut

F. RECONCILIATION AND SENSITIVITY

- ☐ Model reconciled to C2 financials; implied burn and runway match
- ☐ Metrics live on the H2 dashboard Financial Health category
- ☐ Sensitivity on retention and CAC run and recorded

G. EVIDENCE PACKAGE

- ☐ Economics evidence package assembled for Guide J1
- ☐ Single most-likely-challenged sensitivity identified and answered
- ☐ For CVC tracks: PMS reconciliation and fair-value linkage confirmed with the Close Owner

H. FINAL CHECK

- ☐ The economics are measured, not modeled
- ☐ The unit is profitable, or the fix and its lever are named
- ☐ The model improves by cohort, and the verdict would survive Investment Committee scrutiny

**If the model still loses money per unit with no named lever
→ Do not scale. Fix the economics first.**

