

TWENTYTHOUSAND UNCOMPILED CODEBASES.

Thirty-two beats in five movements — thirty-two months, four failed attempts, the constraint that turned out to be arithmetic, and an ending that concedes what it has not proved. **Read it brief or in full, through whichever lens you like — the spine does not change.**

I · EXPOSITION — THE WORLD AS IT IS

II · RISING ACTION — FOUR ATTEMPTS, EACH FAILING
BIGGER

III · CLIMAX — THE PART THAT CHANGED

IV · FALLING ACTION — WHAT FOLLOWS IF THAT IS TRUE

V · CONCLUSION — **NO GATE HAS BEEN CLEARED.**

MOVEMENT 1 OF 5 · EXPOSITION

EXPOSITION

The world as it is, and the fact that
breaks it

THIRTY-TWO MONTHS

It takes about thirty-two months to deliver an American home.



Each square is one month on the critical path, from site identification to closing: feasibility, entitlement, design and review, site work, vertical build, sale.

INVESTORS

Thirty-two months is longer than the learning cycle any risk-capital pool is built to tolerate. Hold that number — it is the one that decides who is allowed to fund housing.

POLICYMAKERS

No dataset in the country tracks this figure end to end. It is assembled from separate sources that were never designed to be added together.

RESEARCH

The figure is assembled, not measured. Register row E-038 records that absence as a finding rather than a footnote: Census measurement begins at authorization, and nothing spans site identification to closing.

REGISTER [E-002](#) [E-004](#) [E-005](#) [E-006](#) [E-038](#) [CHECK THESE ROWS →](#)

Which of those months are actually building the house?

EIGHT OF THIRTY-TWO

Eight of those months are spent building the house.
The other twenty-four are paper.



Twenty months pass before physical work begins. Four are site work. Eight are the house going up. Two are the sale. The black squares are not the problem — they are the product. Everything else is overhead.

INVESTORS

Every prior attempt to industrialise housing went after the eight. The twenty-four have never been touched.

POLICYMAKERS

The part that is slow is the part government administers. That is not an accusation — it is an opportunity, because information processing is the one input that has become dramatically cheaper.

RESEARCH

Census reports 9.1 months authorization-to-completion for single-family in 2024, of which 7.6 is building. The pre-permit phase dominates the timeline and is not physical work.

REGISTER E-002 CHECK THESE ROWS →

So what happens in the other twenty-four?

NOTHING CHECKS THE RULES

A rule is compiled when a computer can check it.

PROSE

"Compatible with neighbourhood character."

Read by a person. Interpreted. Arguable. One project at a time, in each of ~20,000 jurisdictions.

COMPILED

```
setback.rear >= 15ft
```

Checked by a machine. Deterministic. Reproducible. Free at the millionth query.

The way a tax form computes a number, not the way an essay is graded. America's building and zoning rules are written as prose, so nothing checks them automatically. Every project is read, interpreted and approved by hand, one at a time.

INVESTORS

Prose is why nothing carries forward between projects, and why housing has no products — only projects.

POLICYMAKERS

This is why a reform can pass and change nothing on the ground. The statute is prose too, and it lands in a system that can only process prose by hand.

RESEARCH

"Compilable" here means expressible as a deterministic rule over measurable parcel and design attributes. What share of American provisions meet that test has never

been measured — see beat 41.

Prose is the cause. Now: how much is it costing?

A QUARTER OF THE PRICE

Regulation accounts for roughly a quarter of the price of a new American home.

26.4%

OF A NEW HOME'S PRICE IS REGULATION
\$131,734 OF \$499,500 AVERAGE

~2 in 3

US HOUSEHOLDS OWN — AND HOLD THEIR
DOMINANT ASSET IN HOME EQUITY

#1

ISSUE FOR VOTERS AGED 18–34
GOING INTO THE MIDTERMS

\$131,734 of a \$499,500 average new-home price. Meanwhile home equity is the median American household's dominant asset and its retirement plan, and roughly two thirds of households own. That single fact sets the politics of everything downstream.

INVESTORS

A cost line that large, sitting in the one part of the process nobody has automated, is the definition of an addressable market.

POLICYMAKERS

Housing is now the top issue for voters aged 18 to 34 going into the midterms. The constituency for this exists; the instrumentation to serve it does not.

RESEARCH

The 26.4% figure comes from a trade association advocating deregulation and is graded accordingly — triangulate before relying on it. It is carried here because it is the best published estimate, not because it is disinterested.

| A quarter of what, though? Size the thing first.

SIXTEEN PERCENT OF THE ECONOMY

Roughly \$5 trillion a year. \$48 trillion of standing assets. And a shortfall measured in millions of homes.

~\$5

TRILLION

a year — housing's share of the American economy. **About 16% of GDP**, in an economy of roughly \$30 trillion.

\$48

TRILLION

the value of the homes Americans own. **The largest asset class in the country**, and the median household's whole net worth.

WHERE THAT 16% SITS

3.7% · ~\$1.1T

12.3% · ~\$3.8T

BUILDING HOMES

— and this is the part that has been shrinking

LIVING IN THEM

3.7M homes short of demand

Freddie Mac 2024 · 3.78M Up for Growth 2025 · estimates vary by method

~14% of output growth forgone, 1964–2009

from housing supply constraints — contested, see below

\$132k of regulation in each new home

26.4% of a \$499,500 average — trade-association estimate

Hsieh & Moretti put the growth cost at 36% under perfect labour mobility and 14% under imperfect mobility. Their published text reported 8.9% and 3.7%, which understate their own tables — an arithmetic error the authors conceded. The lower figure is the defensible one and the dispute is live.

Housing is about 16% of US GDP — roughly \$5 trillion a year in an economy of about \$30 trillion, of which some \$3.8 trillion is the value of living in homes and about \$1.1 trillion is the work of building them. That \$1.1 trillion is what this argument is about, and it is the part that has been shrinking. Standing behind it is \$48 trillion of owner-occupied housing: the largest asset class in the country, and the median household's entire net worth. Against all of that, the country is roughly 3.7 million homes short of demand, and the best-known estimate of what supply constraints cost in forgone output runs to double-digit percentages of growth over four decades.

INVESTORS

The addressable surface is not the \$5 trillion. It is the roughly \$1.1 trillion of residential fixed investment, plus the transaction and financing layers on top of it — still one of the largest under-automated processes in the economy.

POLICYMAKERS

The shortage figure is the one to hold, and to hold loosely: estimates range by method and definition, and the Congressional Research Service has reviewed why they disagree. What is not disputed is the direction or the order of magnitude — millions of homes, sustained over years.

RESEARCH

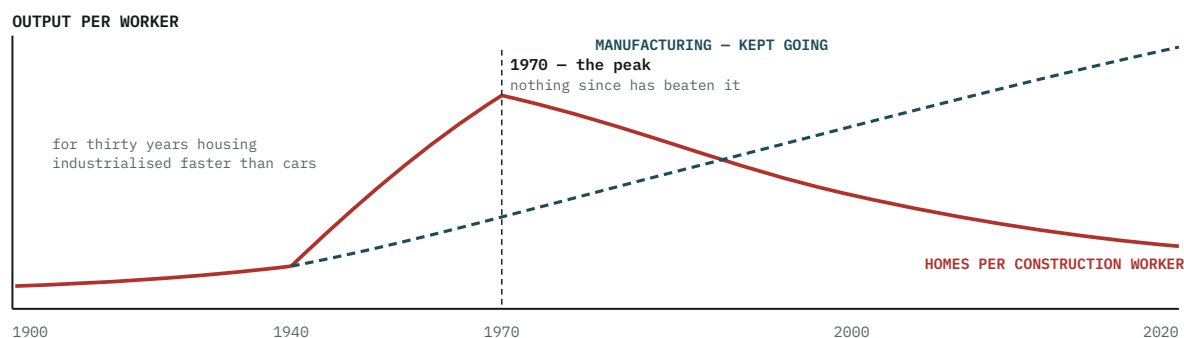
Three grades on one slide. The GDP share is Confirmed but published by a trade association from BEA data, and Q1 2026 already reads 15.9%. The dollar figures are rounded on purpose: they are arithmetic on the shares, and BEA publishes growth rates rather than levels, so the denominator wants verifying before anyone quotes a precise number. The shortage is Supported and belongs in a range, never as one number. The output cost is Contested, and the correction printed under the chart is why.

REGISTER [E-052](#) [E-055](#) [E-053](#) [E-054](#) [CHECK THESE ROWS →](#)

A sixth of the economy, short by millions. So it must be improving.

NOTHING HAS BEATEN 1970

For thirty years American housing industrialised faster than cars. Then it stopped, and it has never recovered.



Shape as reported in NBER 33188: stagnant 1900–40, a boom to 1970 in which homes per worker at times outgrew cars per worker, then a collapse. Schematic — the curve shows the finding, not plotted values.

Homes per construction worker were flat from 1900 to 1940, rose steeply to 1970 — at times outgrowing cars per worker — and then fell. Manufacturing kept going and never looked back. Whatever changed, it changed around 1970, it changed only in this industry, and more than half a century of technology since has not undone it.

INVESTORS

Every input has improved since 1970 — materials, machines, software, logistics, capital. Output per worker did not. That gap is where the value is, and it is why the constraint cannot be a technology gap.

POLICYMAKERS

This is the fact that should trouble a legislator most, because it rules out the easy explanations. Not a labour shortage, not interest rates, not a bad cycle: a fifty-five year plateau that no boom has lifted.

RESEARCH

The best causal work attributes the plateau to project-level regulation capping firm size — a competing diagnosis this document has not resolved. A separate dispute

holds that part of the measured decline is a price-deflator artefact. Neither is settled, and both are on the record here.

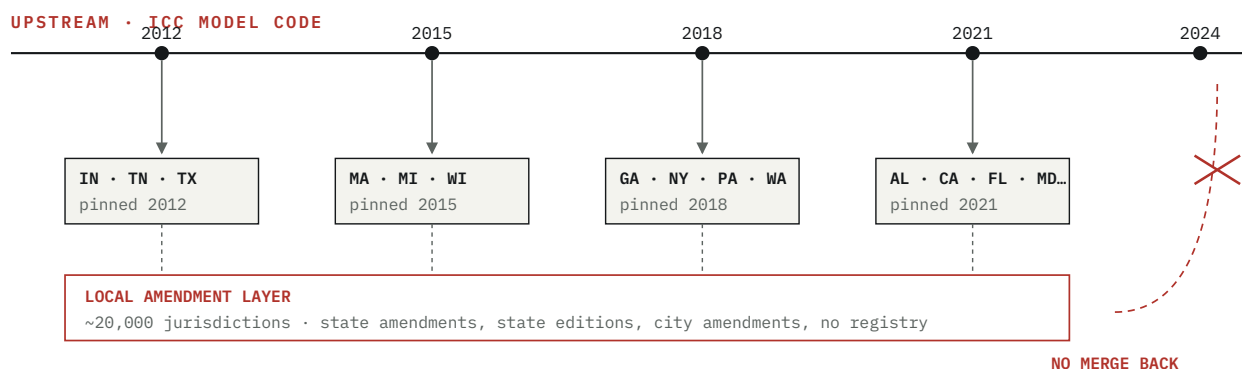
REGISTER [E-015](#) [E-016](#) [E-018](#) [CHECK THESE ROWS →](#)

Everything else got better. What did housing have that the others did not?

STILL MOVEMENT 1 • INCITING INCIDENT

TWENTYTHOUSAND FORKS

This is not one building code with local variations. It is a fork tree, thousands of branches wide.



The International Code Council publishes model codes on a three-year cycle. States and localities adopt on their own timelines with their own amendments. As of 2024 adopted editions spanned 2012 through 2021 — Indiana, Tennessee and Texas four cycles behind current. Version pinning with no resolver. Forks with no diff. Transitive dependencies on independent cycles. No upstream merge.

INVESTORS

No tool exists to compare one jurisdiction's adopted code to any other's. Regulatory divergence across America is unmeasured — not because it is unimportant, but because it is currently unmeasurable.

POLICYMAKERS

When a jurisdiction amends its code, nobody can compute which in-flight designs are invalidated. The blast radius of any change is unknown until it is felt.

RESEARCH

Very few jurisdictions adopt a model code unmodified. Most amend; some republish the entire code as a state edition, which is a hard fork.

REGISTER

E-024

E-025

CHECK THESE ROWS →

Fragmentation is the shape. Here is what it costs you.

EIGHT CAPABILITIES, ALL MISSING

Eight things every mature software system has, and housing production does not.

No static analysis ERRORS SURFACE IN PRODUCTION	No type system INVALID STATES ARE REPRESENTABLE
No shared state SIX PARTIES REBUILD THE SAME FACTS	Blocking calls NO CONCURRENCY, NO TIMEOUTS
No regression tests AMENDMENTS BREAK UNKNOWN THINGS	No package registry NOTHING IS REUSABLE BY REFERENCE
No demand signal BUILD FIRST, DISCOVER MARKET LATER	No observability THE SYSTEM EMITS NO TELEMETRY

No static analysis, so every error surfaces in production. No type system, so invalid states are representable. No shared state, so six parties reconstruct the same parcel facts independently. Blocking sequential calls with no timeouts. No regression tests, so amendments break unknown things. No package registry. No demand signal. No observability.

INVESTORS

The cost of a defect rises by roughly an order of magnitude at each stage it survives. Housing catches its defects at the most expensive stage available.

POLICYMAKERS

The last item is the one that should trouble a legislator most: states pass reforms and then have no instrumentation to determine whether they worked. You cannot optimise what was never measured.

RESEARCH

Every capability on this list has been standard in software engineering for decades. None is exotic, and none has ever been applied to housing production. Singapore's shared national schema is the one production counter-example.

REGISTER E-021 E-022 E-026 [CHECK THESE ROWS →](#)

Every one of these has been solved before – somewhere.

MOVEMENT 2 OF 5 · RISING ACTION

RISING ACTION

Four attempts, each failing bigger
than the last

THE TECHNOLOGY WORKED

The technology worked. The demand floor was a government appropriation — and appropriations get cancelled.

1969
-74

OPERATION BREAKTHROUGH

FIXED

Factory production, at federal scale

KILLED BY

The demand floor was an appropriation — withdrawn in 1973

Twenty-two housing system producers selected from over two hundred competitors. The manufacturing half largely worked. The market-aggregation half never did, and the 1973 termination of federal production subsidies removed the demand floor participants had underwritten against.

INVESTORS

Built the factory and bought the order book with a subsidy. The order book was an appropriation, and it was withdrawn.

POLICYMAKERS

The programme is remembered as a technology failure. It was a demand-aggregation failure, caused by a budget decision three years in.

RESEARCH

Diagnosed as an engineering post-mortem: built the production layer, attempted demand aggregation via subsidy, left the approval, information and valuation layers untouched.

| The next attempt fixed the demand problem. It still died.

IT WORKED. THEN FINANCE KILLED IT.

It worked. It produced the cheapest housing America has ever built — and then finance strangled it.

1976

THE HUD CODE

FIXED

A certified national type, by federal preemption

KILLED BY

Comparables-based finance treated it as personal property

<30% vs >70% loan approval • 5.61% vs 1.20% spreads • 240,000/yr → 93,000 shipments

A single national construction standard for manufactured homes, displacing local codes. Federal preemption, delivered. It produced the only consistently low-cost new-build housing product in the country. Then: loan applications approved under 30% of the time against over 70% for site-built. Rate spreads of 5.61% against 1.20%. Under 4% of chattel originations were refinances against 44% site-built. Shipments fell from roughly 240,000 a year to 93,000.

INVESTORS

Preemption was granted and a certified national type existed. The product still died, because nobody could affordably finance it. This is the clearest evidence in existence that turning one lock is not enough.

POLICYMAKERS

America already ran the preemption experiment, at national scale, fifty years ago. It succeeded on its own terms and was killed by a lock nobody was watching.

RESEARCH

The best-evidenced cluster in the register — E-009 through E-014. Note E-014: 60% of these borrowers own their land and 17% still take chattel financing, which complicates the simple legal-classification story. Channel matters, not just statute.

REGISTER

E-009

E-010

E-011

E-012

CHECK THESE ROWS →

A certified type nobody could finance. Could it at least be compiled?

TWENTY-EIGHT YEARS BOUGHT ONE CITY

It worked too. It cost twenty-eight years of hand-encoding to buy exactly one jurisdiction.

1997
-2026

CORENET • SINGAPORE

FIXED

Compiled rules, shared schema, 7-agency review in 20 days

KILLED BY

Rules hand-encoded — 28 years bought one jurisdiction

Singapore built the first successful automated code-compliance system anywhere. Its current generation runs seven-agency concurrent review against a shared national schema, returns one consolidated response inside twenty working days, and becomes mandatory for all new projects in October 2026. But its rules were hand-encoded into a fixed object library, and users cannot author new ones.

INVESTORS

Twenty-eight years, one jurisdiction. Multiply that unit cost by twenty thousand and you have the reason nobody replicated it. Remember that multiplication — it returns at beat 16.

POLICYMAKERS

This is the existence proof that compiled codes work in production, with a regulator's safety record intact. It is not speculative. It is mandatory law in a developed country this October.

RESEARCH

The constraint generalises: every comparable system — CORENET, BIM Assure, Solibri, EDM — hand-encoded its rules into fixed object libraries with limited user

authoring. That is the citation the whole threshold argument rests on.

REGISTER

E-019

E-020

E-021

E-022

E-023

CHECK THESE ROWS →

It could – for one city, at a price nobody else could pay.

MONEY WAS NEVER THE MISSING INPUT

Billions of dollars. No capital constraint at any point.
Bankrupt anyway.

2015
-21

KATERRA

FIXED

Vertical integration of design and manufacture

KILLED BY

A manual review queue upstream of everything it built

Vertical integration of design and manufacture, funded at a scale no prior attempt enjoyed. It optimised the build step while the pipeline around it stayed manual. A faster compiler behind a manual review queue produces no throughput.

INVESTORS

This is the slide that should make an investor uncomfortable, and it should. The most-funded attempt failed without ever facing a funding problem. Money was not the missing input.

POLICYMAKERS

No amount of private capital routed around the approval process. It waited in the same queue as everyone else.

RESEARCH

Read as a controlled experiment: capital and manufacturing technology were held abundant, and the outcome did not change. That isolates the binding constraint to somewhere else in the stack.

| So not capital, and not technology. Then what?

EACH TURNED ONE LOCK

Four attempts. Each fixed one layer, left the rest manual, and was killed by a layer it did not touch.

Operation Breakthrough

Production, plus demand bought with a subsidy

THE APPROPRIATION WAS CANCELLED

The HUD Code

A certified national type, by federal preemption

NO FINANCING PATHWAY

CORENET

Compiled rules, shared schema, parallel review

HAND-ENCODED — ONE JURISDICTION

Katerra

Industrialised the build, at unlimited funding

A MANUAL QUEUE UPSTREAM

Four attempts. Each turned one lock. Each was killed by a lock it never touched.

Breakthrough built production and bought demand with a subsidy. The HUD Code delivered a certified type with no financing pathway. CORENET compiled the rules for one jurisdiction by hand. Katerra industrialised the build behind a manual queue. The failures are not bad luck. They are what happens when a stack is treated as a single problem.

INVESTORS

Four different failure modes, one shared cause: partial coverage of a system whose locks are complements, not substitutes.

POLICYMAKERS

Every one of these was a serious, well-resourced, competent effort. Treating them as blunders misses the finding entirely.

RESEARCH

The pattern was derived from the American record. Whether it reproduces internationally is the next beat — and it does, which is stronger evidence than a single national record can provide.

REGISTER E-012 CHECK THESE ROWS →

That is the American record. Does it reproduce elsewhere?

STILL MOVEMENT 2 • CRISIS

FOUR CITIES, FOUR LOCKS

Tokyo, Auckland, Vienna, Singapore. Each solved a genuinely different constraint and left the others in place.

CITY	APPROVAL	LAND	FINANCE	DEMAND	COST
Tokyo NATIONAL ZONING	●	○	○	○	◐
Auckland UNITARY PLAN	●	◐	○	○	○
Vienna SOCIAL HOUSING	○	●	●	◐	○
Singapore HDB + CORENET	●	●	●	◐	○
Arizona CASITA PREEMPTION	◐	○	○	○	○
United States CURRENT STATE	○	○	○	○	○

● SOLVED · ◐ PARTIALLY ADDRESSED · ○ NOT ADDRESSED

Tokyo: twelve national zones, residential permitted in all but one, as-of-right approval. Auckland: three-quarters of residential land upzoned, rents 23% below the synthetic-control counterfactual at eight years. Vienna: about 60% of residents in public or limited-profit housing, land taken permanently out of the market. Singapore: land, finance and process together — via a state with compulsory acquisition powers no American jurisdiction possesses. Arizona: the right granted in 2026, and nothing built to exercise it.

Note what nobody has: a compiled process layer in a jurisdiction that also granted the right. That is the whitespace.

POLICYMAKERS

Auckland is the important one for a legislator. It is the cleanest large-scale natural experiment available anywhere, and it settles the question of whether the saving reaches residents: consents up 21,808 at five years, permits per capita doubled against counterfactual, rents 23–28% below, Lower Hutt replicating at 21%.

RESEARCH

Two caveats travel with this slide. Tokyo's permissive zoning is downstream of an asset structure America does not have — Japanese homes depreciate to near zero on a thirty-year rebuild cycle, so homeowners hold no supply-restriction interest. That claim is graded Supported, not Confirmed, because the causal direction is argued rather than established. And Vienna has a serious published critique: engage it rather than dismissing it.

REGISTER

E-029

E-030

E-031

E-032

E-033

E-034

E-035

E-027

CHECK THESE ROWS →

It does – and it exposes the same gap every time.

NOBODY HAS BOTH HALVES

Preemption grants the right. Compilation makes the right exercisable. Nobody has built both.

THE LAW

GRANTS THE RIGHT

Tokyo	yes
Auckland	yes
Arizona	yes
Singapore	yes

THE COMPILER

MAKES THE RIGHT EXERCISABLE

Tokyo	no
Auckland	no
Arizona	no
Singapore	yes *

* via an unusually strong state with compulsory land acquisition powers no American jurisdiction possesses.

NOBODY HAS BOTH HALVES.

Tokyo has the law and no compiler — Japan still permits by hand, because it deleted the fragmentation problem legislatively instead of solving it. Singapore has the compiler and needed an unusually strong state to get it. Auckland has the law and is only now generating the measurement. Arizona granted the right in 2026 and built no plumbing to exercise it.

INVESTORS

Each half is worth substantially more in the presence of the other, and neither delivers the industrialisation payoff alone. Nobody has assembled the pair.

POLICYMAKERS

Arizona is the live American case and the uncomfortable one. Statewide by-right accessory-dwelling rights, with automatic loss of local control on a missed deadline — an unusually strong forcing mechanism. And no statewide plan library, no shared parcel record, no published permit volume. The right exists. Nothing exercises it.

RESEARCH

One correction to how this argument is usually made: the American first-best is not national zoning. Land use is state police power delegated to localities. The realistic first-best is state-level preemption — Auckland's model rather than Tokyo's — and it is already moving in Montana, California, Washington and Arizona.

REGISTER [E-027](#) [E-032](#) [E-037](#) [CHECK THESE ROWS →](#)

Fifty years, five jurisdictions, no exception. Unless something changed.

MOVEMENT 3 OF 5 • CLIMAX

CLIMAX

Everything so far explains why it failed. This is the part that changed.

IT WAS ARITHMETIC, NOT ENGINEERING

Nobody replicated Singapore because the idea was doubted. They did not replicate it because of a multiplication.

28 years of hand-encoding

×

$n = 1$

VIABLE — SINGAPORE BUILT IT

28 years of hand-encoding

×

$n = 20,000$

CLOSED — NOBODY ELSE TRIED

The market was gated by a multiplication, not by a technology and not by political will.

The cost of writing a compiler by hand, multiplied by twenty thousand jurisdictions, exceeded any plausible return. That is why the one success is a city-state: at $n = 1$, twenty-eight years of hand-encoding is affordable. At $n = 20,000$ it is not, and no amount of conviction changes that.

INVESTORS

This product was gated by a single number. Not by technology, not by demand, not by regulatory appetite. One number.

POLICYMAKERS

Which means the barrier was never political will, and a jurisdiction that wants this has not been refusing it. It has been priced out of it.

RESEARCH

This reframes fifty years of failure as a cost-threshold problem rather than a feasibility problem — and it makes the threshold an empirical question rather than a rhetorical one.

REGISTER

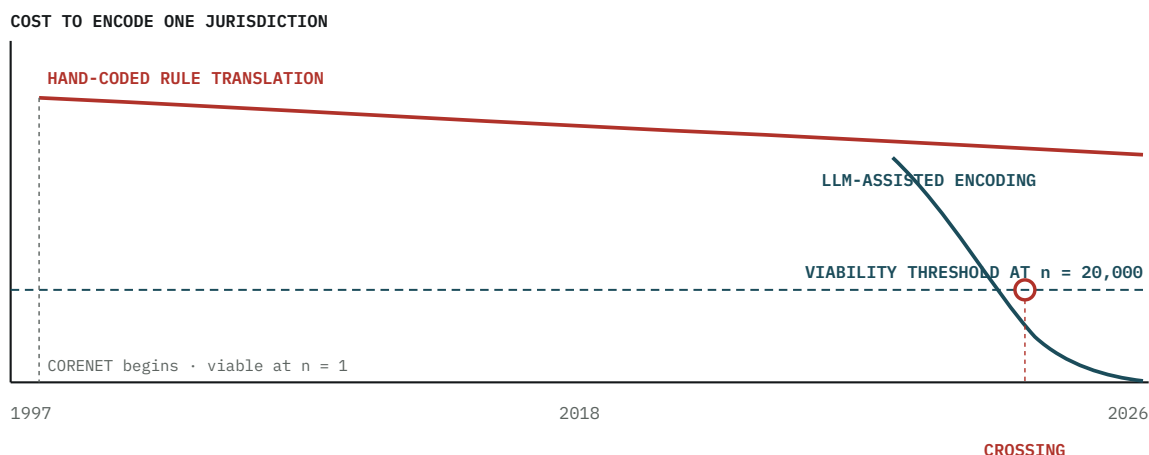
E-023

CHECK THESE ROWS →

One number closed this market. Watch what happened to it.

THE NUMBER MOVED

The cost of encoding one jurisdiction collapsed about three years ago — because machines can now read the rules.



Schematic, not measured. The shape is the claim; the axis values are the research question.

For twenty-eight years the only way to turn a jurisdiction's prose rules into executable logic was for a person to read them and write out each provision by hand. That is what Singapore did, and it is why one city cost twenty-eight years. Language models can now do a large part of that reading and drafting — the first time the unit cost of this translation has moved at all.

INVESTORS

And the opening has not been priced, because the number that closed the market has never been recomputed. That is the entire investment claim, stated in one sentence.

POLICYMAKERS

The implication for a legislature is direct: the tooling that made Singapore's process possible is no longer a national-scale capital project. It is now within reach of a single state.

RESEARCH

Graded Untested, and now carried as register row E-051. Singapore's twenty-eight years is the only datum on this chart, and it measures the hand method. The cost per jurisdiction of the new one has never been measured by anyone, including us.

REGISTER

E-023

E-051

E-040

E-041

E-042

CHECK THESE ROWS →

Now the part that would be easy to leave out.

AND NOBODY HAS CHECKED

The chart is schematic. The crossing point has never been measured. That is not a weakness in the claim — it is the claim.

STATED PLAINLY, AT THE MOMENT IT WOULD PAY NOT TO

**THE SHAPE OF THE CURVE IS THE CLAIM.
THE AXIS VALUES ARE THE RESEARCH
QUESTION.**

Quantifying the crossing point — cost per jurisdiction to encode, at a stated accuracy level — is the single most valuable number this project could produce, and it does not currently exist.

The shape of that curve is the claim; the axis values are the research question. Quantifying the crossing point — actual cost per jurisdiction to encode, at a stated accuracy level — is the single most valuable number this project could produce, and it does not currently exist.

INVESTORS

An opportunity that is real and unmeasured is the only kind still available to a new entrant. If the number had been published, the position would already be taken.

POLICYMAKERS

No state has instrumented any of this. Arizona passed a significant housing reform and built nothing to determine whether it worked. Confirming that absence is itself a finding.

RESEARCH

Three register rows are empty and they are the three the argument leans on hardest: E-039, the objective-versus-discretionary split of American zoning, never measured anywhere. E-037, Arizona permit volume since preemption, not published. E-038, the full idea-to-sale cycle, never measured end to end.

REGISTER E-039 E-037 E-038 [CHECK THESE ROWS →](#)

Unmeasured – but not unordered. The sequence comes next.

MOVEMENT 4 OF 5 • THE SOLUTION

FALLING ACTION

What follows if that is true

THREE LOCKS, ONE ORDER

Politics chooses the ground. Information is the wedge.
Capital is the thesis.

STAGE

THE QUESTION IT ANSWERS

WHAT BINDS THERE

ENTRY

Can this be built here at all?

POLITICS – the principal-agent structure decides which segments may exist

THROUGHPUT

Given permission, how fast and how certainly?

INFORMATION – prose rules force per-instance review

SURVIVAL

Given throughput, does it survive at scale?

CAPITAL – comparables-based valuation kills anything without neighbours

Three things block American housing and they bind in a strict order. Entry: can this be built here at all — politics decides. Throughput: given permission, how fast and how certainly does a unit move — information decides. Survival: does the product last at scale — capital decides. The binding constraint is not a fact about housing. It is a function of which stage you are standing in.

INVESTORS

Sequence by politics, wedge with information, win on capital. Type-based valuation is the endgame because it is the lock that kills at scale, and the position with no identified competitors.

POLICYMAKERS

Politics first does not mean lobbying first. It means letting the map choose the segment — build where the incumbent homeowner is also the builder, because that is the only ground where entry has already been granted.

RESEARCH

Note the asymmetry in evidence strength. The valuation lock has the best evidence because it is the only lock America has ever gotten far enough to fail at. Evidence strength tracks how far each attempt got, not how much each lock matters.

REGISTER

E-007

E-008

E-021

E-027

E-028

[CHECK THESE ROWS →](#)

Every other sequence has already been tried.

EVERY OTHER ORDER HAS BEEN RUN

Four sequences, four failures, and each one is already in the record.

SEQUENCE	WHO RAN IT	WHY IT FAILED
Capital first	Katerra	Money waited in a manual queue. No certified type for finance to attach to.
Information first	The screening market	Compiled rules without political standing are advisory. Moved 2 of 32 months.
Politics only	Arizona	A granted right with no plan library, no shared record, no type-based finance.
Politics + capital	The HUD Code	Closest anyone came. No information layer, so finance defaulted to chattel.

Capital first: Katerra. Money waited in a manual queue. Information first: the screening market — Symbium, Buildability, Canibuild — compiled rules across thousands of counties, and moved two of thirty-two months, because compiled information without political standing is advisory. Politics only: Arizona, a granted right with nothing to exercise it. Politics plus capital, skipping information: the HUD Code, the closest anyone came, with no type-based valuation record to lend against.

INVESTORS

The screening market matters most here. It has already run the information-first experiment at commercial scale and published the answer. Compiling the rules is necessary and insufficient — the wedge has to carry legal weight, not just information.

POLICYMAKERS

The failures are not symmetric. Skipping politics wastes a company. Skipping information wastes a statute. Skipping capital wastes an industry.

RESEARCH

This corrects an error in the thesis as published: Red Team 04 claims existing vendors leave the ruleset in prose. Register row E-040 refutes that. The sharper form is the one on this slide.

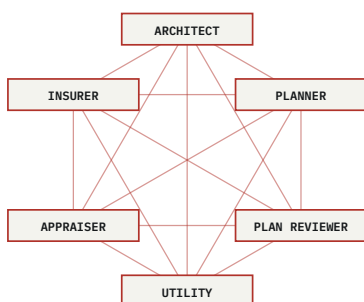
REGISTER E-023 E-027 E-037 E-040 E-041 E-042 CHECK THESE ROWS →

So look at who is actually in the room, and what each of them is doing.

SIX PARTIES, SIX VERSIONS OF THE TRUTH

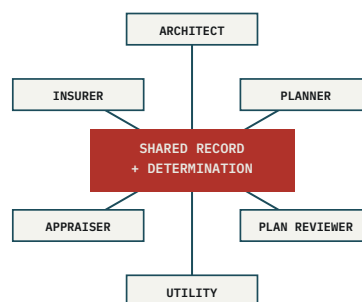
The industry is not a line. It is a mesh in which everyone rebuilds the same facts and nobody is authoritative.

TODAY · SIX PARTIES REBUILD THE SAME FACTS



15 possible conversations · 6 reconstructions · no shared answer
None of them is authoritative, so disagreement is resolved by meeting.

WITH LINTEL · SIX PARTIES READ ONE RECORD



6 connections · 1 record · 1 authoritative answer
Disagreement is about judgement, not about what the facts are.

An architect, a planner, a plan reviewer, a utility engineer, an appraiser and an insurer all need the same facts about the same parcel — dimensions, easements, utility access, flood status, setbacks, what is permitted. Every one of them reconstructs those facts independently, none of them is authoritative, and disagreement is resolved by meeting. Six parties is fifteen possible conversations. Give them one record and one determination to read, and it is six.

INVESTORS

This is the pathology behind every other one. Six independent reconstructions of the same dataset is not inefficiency at the margin — it is the reason a project cannot be a product, and the reason the tenth costs what the first did.

POLICYMAKERS

Note what the right-hand picture does not change: the same six parties, with the same authority, asking the same questions. What changes is that they stop each producing a private answer. Singapore's seven agencies read one national schema, which is why they can answer together in twenty working days.

RESEARCH

The claim that this is the binding pathology is argued rather than measured. Layer 3's falsification test sits exactly here: if most measured delay turns out to be jurisdiction queue time rather than applicant resubmittal from inconsistent facts, a shared record delivers considerably less than this slide implies.

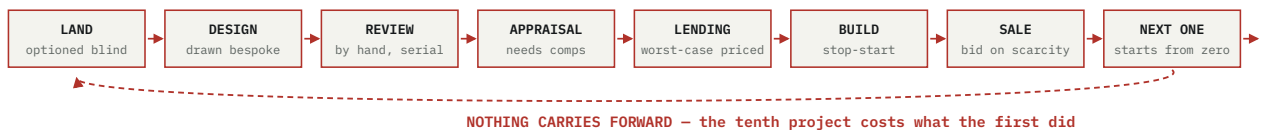
REGISTER [E-022](#) [E-021](#) [E-050](#) [CHECK THESE ROWS →](#)

One record instead of six. Now: what does the tenth project cost?

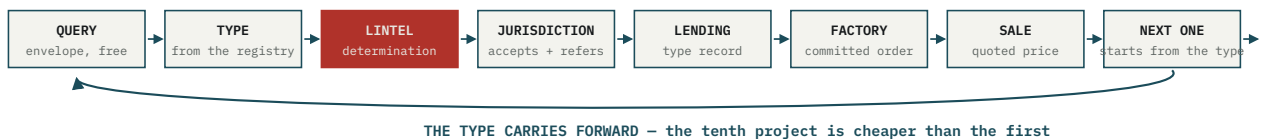
THE TENTH PROJECT SHOULD BE CHEAPER THAN THE FIRST

Same eight steps. Same standards. The difference is whether anything survives to the next one.

TODAY · EVERY PROJECT STARTS FROM ZERO



REBUILT · THE TYPE AND THE RECORD CARRY



Same eight steps. Same standards. What changes is that three of them stop being redone from scratch, and one of them — the determination — is new. That is the whole structural difference between the two rows.

Today: land is optioned before anyone knows what is permitted, the design is drawn bespoke, review runs by hand and in series, appraisal needs comparables that do not exist, lending is priced to the worst case, building runs stop-start, and the sale is a bid against scarcity. Then the next project starts from zero. Rebuilt, the same eight steps run against a certified type and a shared record — and the loop returns to the type rather than to nothing.

INVESTORS

That loop-back arrow is the whole thesis in one mark. An industry where the tenth unit costs what the first did has no products, only projects, and no compounding of any kind.

POLICYMAKERS

Count what is unchanged: the same eight steps, the same standards, the same reviewers. Three steps stop being redone from scratch and one step is new. That is the entire structural difference.

RESEARCH

The claim is about marginal cost, and it is not measured here. That the tenth project would be cheaper than the first follows from reuse rather than from evidence — no American jurisdiction has produced the data because no American jurisdiction has the arrangement.

REGISTER E-021 E-022 E-002 CHECK THESE ROWS →

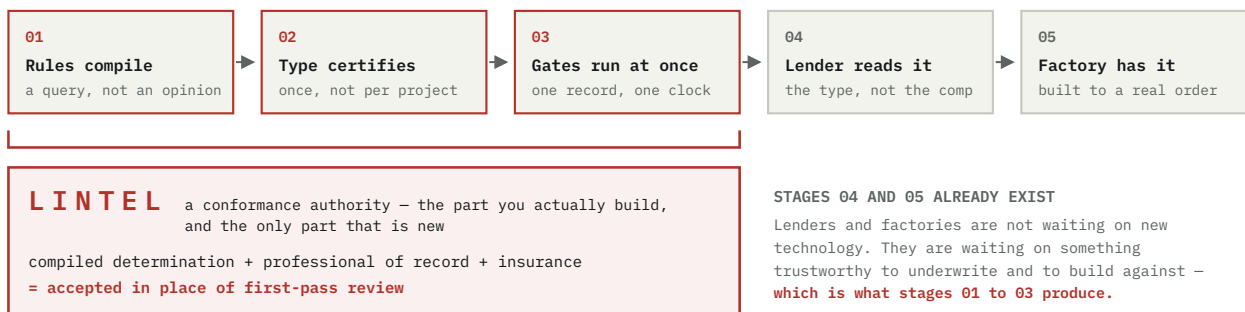
One box in that second row is new. It has a name.

LINTEL

Five stages, each already ordinary somewhere else.
Only the first three are new — and together they carry the load.

COMPILED HOUSING — THE END STATE

Five stages. Each one ordinary in some other industry, or in some other country.



****Compiled housing**** is the end state: rules that compile, a type that certifies once, gates that run at the same time, a lender that reads the type instead of the comparable, and a factory building against a real order. Four of those five already exist somewhere — in Singapore's production system, in state industrialised-building law, in interstate reciprocity, in every other manufacturing industry. What does not exist anywhere is the instrument that makes the first three usable in America. That instrument is ****Lintel**** — a conformance authority: a compiled determination, signed by a professional of record, insured, and accepted by a jurisdiction in place of first-pass review. A lintel is the beam over an opening that carries whatever sits above it. Lint is the program that checks source before it ships. The name is doing both jobs.

INVESTORS

Note where the work is and is not. Lenders and factories are not waiting on new technology — they are waiting on something trustworthy to underwrite and to build against, which is exactly what stages one to three produce. Lintel is the buildable company; compiled housing is the market it opens.

POLICYMAKERS

Nothing in stages one to three removes a standard or a review. The determination is a professional's signed opinion, backed by insurance, produced by a checker that can be audited — offered in place of a first pass that a jurisdiction currently performs by hand on every project. A jurisdiction that does not trust it does not have to accept it. That is the entire adoption mechanism.

RESEARCH

This is the part of the argument with the least evidence behind it and the most weight on it. That a jurisdiction will accept a Lintel determination has never been demonstrated; that a carrier will insure one has never been demonstrated. Both are named links on the road, both are unproven, and everything above rests on them. Naming a thing does not make it exist.

REGISTER

E-021

E-022

E-047

E-048

E-050

CHECK THESE ROWS →

That is where it sits. Now: what can you actually ask it?

TWO QUESTIONS, TWO ANSWERS

One is free, advisory, and already sold by other people.
The other carries legal weight, and nobody sells it.

YOU SEND

an address

nothing else — no drawings, no application, no fee

YOU GET BACK, IN SECONDS

the buildable envelope

height, setbacks, lot coverage, permitted uses, parking, the units allowed — and which ruleset and edition each of those came from

YOU SEND

a certified type + a parcel

a design already certified once, and the site you want to put it on

YOU GET BACK

a determination

every binding provision evaluated, conformance stated, exceptions referred — signed by a professional of record, insured, and accepted in place of first-pass review

The first answer is free and advisory, and companies already sell it. The second carries legal weight, and nobody sells it — that difference is the entire business, and the entire risk.

Send an address and get the buildable envelope back in seconds: height, setbacks, coverage, permitted uses, the units allowed, and which ruleset and edition each of those came from. Send a certified type and a parcel, and get a determination: every binding provision evaluated, conformance stated, exceptions referred to the jurisdiction, signed by a professional of record and insured.

The first row is already a commodity — Symbium, Buildability and Canibuild sell versions of it, and the screening market has shown what it is worth on its own: about two of the thirty-two months. The second row does not exist anywhere. The distance between advisory and authoritative is the whole business.

POLICYMAKERS

Note what the second row does not do. It does not decide the discretionary questions and it does not bind a jurisdiction that has not adopted it. It replaces a first pass that is currently done by hand, on every project, on provisions a machine can evaluate exactly.

RESEARCH

The first row is a solved problem with published implementations. The second requires two things nobody has demonstrated: a jurisdiction that will accept it, and a carrier that will insure it. Everything downstream of this slide is contingent on those two.

REGISTER

E-040

E-041

E-042

E-050

CHECK THESE ROWS →

The second answer is the product. So what does it actually look like?

WHAT A DETERMINATION LOOKS LIKE

The product is a document. This is what it would have to contain.

DETERMINATION OF CONFORMANCE		SPECIMEN
PARCEL	301-44-092 · Maricopa County, AZ	
TYPE	ADU-2BR-R3 rev 4 · certified 2026-03-11	
RULESET	Maricopa 2021 IRC + county amendments r7	
EVALUATED	2026-08-19 · engine v2.4.1	
Binding provisions evaluated		214
Objective — computed, conforming		198
Requiring judgement — referred to the jurisdiction		16
PROFESSIONAL OF RECORD	signed · licence on file	
INSURED	named carrier · per-determination limit	
EFFECT	Accepted in place of first-pass review under the adopting statute. The sixteen referred provisions are reviewed by the jurisdiction as normal.	

Specimen – no determination like this has been issued. It is drawn to show what one would have to contain: what was checked, what was computed, what was referred to a human, who signed it, who insured it, and the statutory basis on which a jurisdiction would accept it. The counts are illustrative. The share of provisions that are objective rather than discretionary is register row E-039, and it is empty – which is exactly what Gate 0 measures.

A determination names the parcel, the certified type and the exact ruleset and edition it was evaluated against. It reports how many binding provisions were examined, how many were objective and computed, and how many required judgement and were referred to the jurisdiction. It carries a professional's signature, a named insurer, and the statutory basis on which it is accepted. It is auditable after the fact, because the ruleset version and the engine version are both on it.

INVESTORS

Everything that makes this defensible is on the face of the document: what was checked, what was not, who is liable, and who pays if it is wrong. That is what makes it insurable, and insurability is what makes it acceptable.

POLICYMAKERS

The line that should reassure a building official is the third one. Sixteen provisions referred, reviewed as normal. The determination does not claim the discretionary questions — it clears the ones that are arithmetic so the reviewer's time goes where judgement is actually required.

RESEARCH

Specimen only. No determination like this has been issued, and the counts on it are illustrative rather than measured. The ratio it implies — how many binding provisions are objective rather than discretionary — is register row E-039, which is empty, and is precisely what Gate 0 exists to measure. If that ratio is bad, this document is thin and the argument is wrong.

REGISTER E-039 E-051 E-050 CHECK THESE ROWS →

That is the artifact. Now the machine that produces it.

WHAT IS ACTUALLY RUNNING

Three inputs, two programs, two signatures, three consumers — and a loop that makes the registry better with volume.



Adopted codes, parcel records and a registry of certified types go in. A compiler turns prose provisions into executable rules pinned to a code edition; an engine evaluates a type against a parcel against that ruleset, deterministically. A professional of record signs the result and an insurer prices the risk of its being wrong. What comes out is a determination that a jurisdiction accepts in place of first-pass review, a lender values against, and a factory builds to. Outcomes flow back — cycle times, accuracy, resubmittals, performance in service.

INVESTORS

The feedback arrow is where the durable advantage sits, not the compiler. Anyone can compile a ruleset. The registry that improves with volume, and the accuracy record that makes insurance cheaper each year, are what compound.

POLICYMAKERS

Two boxes in this diagram are what make it acceptable to a jurisdiction rather than merely useful: a named professional who signs, and a named carrier who pays if it is wrong. Software alone would be advisory. Software plus liability is a determination.

RESEARCH

The compiler box is the one carrying the most weight and the least evidence. It presumes provisions can be pinned to an edition and evaluated deterministically at scale — register row E-051 for the cost of doing it, E-039 for the share that can be done at all. Both are empty.

REGISTER E-021 E-022 E-024 E-047 E-051 [CHECK THESE ROWS →](#)

That is the system. Here is the layer stack underneath it, and what each layer would have to fail on.

SEVEN LAYERS, EACH FALSIFIABLE

No layer is load-bearing for the argument as a whole.
Each carries its own kill test and its own substitutes.

L7**Build**

PLACED LAST, DELIBERATELY — WHERE ALL FOUR PRIOR ATTEMPTS BEGAN

L6**Registry and order book**

DEMAND SIGNALS BEFORE PRODUCTION

L5**Valuation adapter**

THE LOCK NOBODY IS WORKING ON

L4**Concurrency and timeouts**

CERTAINTY, NOT MERELY SPEED

L3**Single source of truth**

ONE RECORD, MANY READERS

L2**Type system**

CERTIFY THE DESIGN, NOT THE INSTANCE

L1**Parser and compiler**

RULES BECOME EXECUTABLE

Read bottom to top. Each layer carries its own falsification test and its own substitutes.

Compiler. Type system. Single source of truth. Concurrency and timeouts. Valuation adapter. Registry and order book. Build. Read bottom to top — each layer depends only on those beneath it, and each one names the condition under which it fails and what would replace it.

INVESTORS

L5, the valuation adapter, is the lock nobody is working on and the one that killed manufactured housing. L7, the build, is placed last deliberately: it is where all four prior attempts began.

POLICYMAKERS

Two of these already have American legal precedent. Georgia's industrialized-building act preempts local authority over approved buildings; interstate reciprocity already recognises streamlined certification across state lines; Indiana's reform gives a private-review fallback when the jurisdiction misses a deadline. None of this is unprecedented — it is unassembled.

RESEARCH

Each layer is specified with a falsification test and a list of substitutable implementations, so a failed layer is replaced rather than fatal. That structure is the point: it is what makes the architecture a research object rather than a product pitch.

REGISTER [E-021](#) [E-022](#) [E-047](#) [E-048](#) [E-049](#) [E-050](#) [CHECK THESE ROWS →](#)

Seven layers. Here is what they feel like from the inside.

STILL MOVEMENT 4 • WHAT IT CHANGES

ONE PARCEL, START TO FINISH

The same house, in the system that works — and every piece of it already exists somewhere.

01

Click a parcel

Envelope returns in seconds. Deterministic, free.

02

Pick a certified type

Cost and lead time published.

03

Nothing to entitle

Conformance verified, not re-reviewed.

04

Gates run at once

One record, one statutory clock.

05

Lender reads the type

Not the neighbours who sold.

06

Factory had the order

Before it started.

You open a map and click a parcel. The buildable envelope comes back in seconds — deterministic, reproducible, free — because the rules governing it are executable rather than prose. You choose a certified type that fits inside it, with published cost and lead time. There is nothing to entitle, because conformance is verified rather than re-reviewed. The remaining checks run at the same time against one shared record, each on a statutory clock. The lender underwrites the type's record instead of the neighbours who happened to sell. The factory already had the order before it started.

INVESTORS

Every arrow in that sequence is a place where money currently waits. Removing the waiting is the product — not building faster, which is the one thing here nobody is proposing to do.

POLICYMAKERS

Read what is absent from that sequence: no safety check was removed. Every review still happens. They happen concurrently, against shared facts, on a deadline.

RESEARCH

Each step corresponds to a layer with its own falsification test. If the parcel record proves unobtainable, or the type cannot be certified, or the clock proves politically unenforceable, that step fails and its layer is replaced — the architecture is built so a failed layer is survivable.

REGISTER E-021 E-022 E-050 CHECK THESE ROWS →

That is the developer's seat. Now sit in the other one.

IF YOU JUST NEED A HOME

Everything so far has been told from the seat of someone building. This is the seat of someone trying to get housed.

IF YOU NEED SOMEWHERE TO LIVE	TODAY	BUILT
Finding out what is possible	Months of professional interpretation, paid for, and the answer is an opinion	A query. Free, instant, the same answer for everyone
Knowing the price	Discovered by bidding against scarcity	Quoted before you commit, like any other made thing
Borrowing against it	A new kind of home: under 30% loan approval against over 70%, at 5.61% spreads against 1.20%	A mortgage on a type with a published record — not a chattel loan on personal property
When it goes wrong	Litigation — slow, expensive, rarely proportionate	A warranty against the certificate holder
How long you wait	Thirty-two months, of which eight are anyone building anything	Seven

EVERY FIGURE HERE IS ALREADY IN THE REGISTER. NONE OF IT HAS BEEN SAID FROM THIS SEAT BEFORE.

Today you cannot find out what is possible on a piece of land without paying for months of professional interpretation, and the answer comes back as an opinion. You discover the price by bidding against scarcity. If you want a new kind of home, your loan is approved under thirty percent of the time against over seventy for site-built, at more than four times the rate spread. If it is defective you sue. Built: the query is free, the price is quoted before you commit, the loan is a mortgage against a type with a published record, and the recourse is a warranty.

The third row is the business. Every other row is a better experience; that one is a different asset class, and it is the lock nobody is working on.

POLICYMAKERS

This is the row of the argument that a constituent recognises. Not cycle time, not conformance determinations — whether they can find out what is possible, what it costs, and whether anyone will lend against it.

RESEARCH

Every figure here is already in the register and none of it is new. What is new is the seat: the argument has been made from the developer's chair throughout, which is a real weakness in how this case is usually put. One refinement the third row hides — 60% of manufactured-home borrowers own their land outright and 17% still take a chattel loan, so the barrier is not purely how the law classifies the home. The lending channel matters too, and a fix aimed only at legal classification would miss part of it.

REGISTER [E-001](#) [E-009](#) [E-010](#) [E-011](#) [E-014](#) [E-002](#) [CHECK THESE ROWS →](#)

That is the experience. This is the thing itself.

WHAT ACTUALLY GETS BUILT

Not towers and not prototypes. Three ordinary buildings that are legal somewhere and unbuildable or unfinanceable across most of America.

IN A BACKYARD

AN ACCESSORY DWELLING

\$120,000 – \$350,000

Phoenix metro, today, where the right already exists. Against a \$499,500 average new home — the same land, no new street, no new sewer.

ON A LOT THAT ALREADY HAS A HOUSE

THE MISSING MIDDLE

2–6 homes

What Auckland made legal across three-quarters of its residential land, and what produced 21,808 additional consents in five years.

ON AN ORDINARY STREET

A MIXED BLOCK

Twelve national zones, residential permitted in all but one, nuisance ceilings instead of exclusive use — which is why a shop, a flat and a house share a street in Tokyo and nobody finds it remarkable.

Not one of these is exotic, and not one is a prototype. Each is ordinary somewhere, and illegal or unfinanceable across most of America.

A backyard accessory dwelling in Phoenix runs \$120,000 to \$350,000 — against a \$499,500 average new home, on land that already exists, with no new street and no new sewer. Two to six homes on a lot that already has one is what Auckland made legal across three-quarters of its residential land. A street where a shop, a flat and a house sit side by side is unremarkable in Tokyo, because the zones cap nuisance rather than mandating use.

INVESTORS

The first line is the wedge. It is the cheapest unit of new housing in America, the right to build it already exists in at least one state, and there is no plan library, no shared record and no type-based financing behind it.

POLICYMAKERS

None of these requires a new technology, a subsidy, or a change to what a building must achieve. Each is already ordinary in a jurisdiction that decided to permit it.

RESEARCH

The Phoenix cost range is graded Supported and comes from regional builder sources rather than primary budgets — it needs replacing with real project costs. It is carried because it is the only concrete price of a built thing anywhere in this argument, and until now it appeared on no page at all.

REGISTER

E-036

E-001

E-029

E-030

E-032

CHECK THESE ROWS →

Ordinary somewhere, impossible here. So what has to change?

WHAT ACTUALLY CHANGES

Not "faster." Different in kind — six properties, each one absent today.

PROPERTY	TODAY	BUILT
Compliance	Discovered at review, after land is committed	Computed before commitment
Parcel facts	Rebuilt independently by six parties	One record, many readers
Gates	Serial, no deadline, nobody owns the total	Concurrent, on a clock, defined default
Reuse	Nothing carries forward between projects	Certified types carry forward by reference
Valuation	Comparable sales — a new type cannot be valued	Attaches to the type; location adjusts
Production	Speculative; utilisation cannot be planned	Against a committed forward book

NOTHING HERE CHANGES WHAT A BUILDING MUST ACHIEVE. THE STANDARDS ARE UNCHANGED — THEY BECOME CHECKABLE.

Compliance moves from something discovered at review to something computed before commitment. Parcel facts stop being rebuilt by six parties and become one record with many readers. Gates stop running in series without a deadline. Designs stop being redrawn and start being referenced by version. Valuation stops depending on the accident of having neighbours who already bought one. Production stops being speculative.

Row four is the one that compounds. "Nothing carries forward" is precisely what makes housing an industry of projects rather than products, and it is the row that turns a service business into a product business.

POLICYMAKERS

Note what is not on the list: nothing changes about what a building must achieve. The standards are untouched. What changes is that they become checkable before somebody has committed to land.

RESEARCH

Six properties, six falsification tests. This is the argument's exposed surface — any row that cannot be delivered kills the claim for its layer, and the layer's substitutes are specified rather than assumed.

REGISTER [E-021](#) [E-022](#) [CHECK THESE ROWS →](#)

One of those six is the mechanism everything else rests on.

SIX GATES, ONE CLOCK

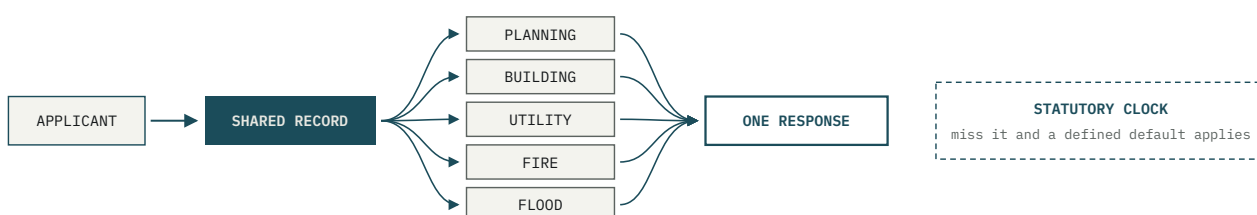
The same six reviews, reading the same facts, at the same time, with a deadline.

TODAY · SIX GATES IN SERIES · NO DEADLINE, NO OWNER OF TOTAL LATENCY



Each gate needs the prior gate's output. Any one can block indefinitely. None is accountable for the total.

BUILT · SAME SIX GATES, CONCURRENT, AGAINST ONE RECORD, ON A CLOCK



Not one check removed. The same six gates, reading the same facts, at the same time, with a deadline.

In production in Singapore since 2023 – seven agencies, consolidated response, twenty working days.

Today each gate needs the previous gate's output as its input, so they execute in series. Any one can block indefinitely, none has a timeout, and nobody is accountable for the total. Given one authoritative record every gate can read, the same six reviews run concurrently and return a single consolidated response — each under a statutory deadline with a defined default if it is missed.

INVESTORS

This is not a proposal. It has been running in production in Singapore since December 2023 across seven agencies, and becomes mandatory there this October.

POLICYMAKERS

The objection this diagram answers is the one that matters most: that speed comes out of scrutiny. It does not. The same reviews happen, by the same reviewers, against better facts. What is removed is the queue between them — and Indiana already has the template for the default remedy, giving applicants a private-review fallback when the jurisdiction misses its window.

RESEARCH

Layer 4's falsification test lives here: if measured delay proves to be jurisdiction queue time rather than applicant resubmittal, this delivers far less than claimed — and if jurisdictions systematically miss the deadline and the default proves politically unenforceable, it produces litigation rather than throughput.

REGISTER E-021 E-022 E-050 CHECK THESE ROWS →

Reordered, not removed. But is a review you did not repeat still a review?

CERTIFY THE CHECKER, NOT THE BUILDING

Two industries where failure kills already certify the design instead of the instance. Housing is the one that does not.

	AVIATION	PHARMACEUTICALS	HOUSING TODAY
What gets certified	The design, once	The reference product	Every project, from scratch
How each unit clears	Verified as conforming to the type	Demonstrated equivalence to the reference	Re-reviewed by hand, in full
Who verifies	Delegated to accredited organisations	The manufacturer, to a standard	Each jurisdiction, independently
Cost of the tenth unit	A fraction of the first	A fraction of the first	The same as the first
Failure kills	Yes	Yes	Yes

TWO INDUSTRIES WHERE FAILURE KILLS ALREADY CERTIFY THE DESIGN RATHER THAN THE INSTANCE. HOUSING, WHERE FAILURE ALSO KILLS, IS THE ONE THAT DOES NOT.

Housing cannot ship and iterate. There is no rollback, no staging environment, no canary deploy. A defect is not downtime — it is structural, permanent and occasionally fatal, which is why "move fast and break things" is not merely inappropriate here but disqualifying, and why it describes a meaningful part of what went wrong at Katerra. Safety-critical engineering met exactly this constraint and answered it by qualifying the toolchain rather than inspecting every output: certify the checker, and treat conforming output as verified by construction.

The same move exists in pharmaceuticals. Abbreviated approval lets a product reach market on demonstrated equivalence to a reference rather than by repeating the full trials. That is the template for the valuation lock — a new housing type valued on equivalence rather than on the accident of having neighbours who already bought one.

POLICYMAKERS

This is the answer to the objection that skipping first-pass review is unsafe, and it is not an analogy invented for this argument. An aircraft design is certified once, individual airframes are verified as conforming to the type, and much of the engineering verification is delegated to accredited organisations — in an industry where failure kills. Nothing here proposes that buildings go unchecked. It proposes that the checking be done once, to the design, by a checker that is itself qualified.

RESEARCH

Note the limit: aviation and pharmaceutical certification are cited here as regulatory structures, not as evidence that delegation improves outcomes — that causal claim is not made. Whether type certification extends to site-built housing is untested. State industrialised-building preemption and interstate reciprocity reach part of it; the site-plan scope is the gap.

REGISTER

E-056

E-057

E-047

E-048

E-049

CHECK THESE ROWS →

Borrowed, not invented. So why has nobody assembled it?

EACH FAILURE HAS A NAMED ANSWER

Four attempts, four causes of death. This is the first design that answers all four.

ATTEMPT	POLITICS	INFORMATION	CAPITAL	DIED OF
Operation Breakthrough				A subsidy order book, cancelled in 1973
The HUD Code				A certified type nobody could finance
CORENET				Hand-encoded — 28 years bought one city
Katerra				Optimised the build behind a manual queue
This design				Covers all three, in that order

● ADDRESSED · PARTIALLY · NOT ADDRESSED — THE CLAIM IS COVERAGE, NOT CONVICTION AND NOT CAPITAL.

Operation Breakthrough's order book was a government appropriation, and appropriations get cancelled — this aggregates real committed demand instead. The HUD Code shipped a certified type nobody could affordably finance — valuation is a layer here rather than an afterthought. CORENET's rules were hand-encoded, so twenty-eight years bought one jurisdiction — encoding cost is the single input that has collapsed. Katerra optimised the build behind a manual queue — the build is placed last here, deliberately, after the queue is gone.

INVESTORS

This is the entire case for why the fifth attempt is not the fourth attempt again. Not more conviction and not more capital — coverage. Every prior attempt was strong on one lock and absent on the others.

POLICYMAKERS

Every one of those four was serious, competent and well-resourced. They did not fail through incompetence; they failed through partial coverage of a system whose locks are complements. That is what makes the pattern instructive rather than embarrassing.

RESEARCH

The claim is coverage, not certainty. Each answer is a design commitment carrying a falsification test, and two of them rest on rows of the register that are still empty. A design that covers all three locks on paper and fails Gate 0 is still a failed design.

REGISTER E-012 E-023 CHECK THESE ROWS →

And the payoff, measured on the clock that decides who can fund it.

THIRTY-TWO TO SEVEN

The same house, on a different clock.

TODAY · 32 MONTHS



COMPILED · 7 MONTHS



QUERY + CERTIFY · 1

SITE
PREPARATION
· 2

FACTORY BUILD + SET · 4
- THE WORK SURVIVES

Query and certify in under a month. Two months of site preparation. Four months of factory build and set. Twenty-five months eliminated — and every one of them was waiting, not building. Every stage that compresses to near zero is an information-processing stage. Every stage that resists compression is physical.

INVESTORS

Four prior attempts to industrialise housing concentrated on the one row of that table that is hardest to compress, and left the six easiest untouched.

POLICYMAKERS

The argument is not that houses should be built faster than is physically sensible. It is that the twenty-five months surrounding the build are overhead, and they are administrative overhead.

RESEARCH

The compiled column is an estimate, not a measurement, and this follows if — and only if — the pathologies at beat 06 are actually fixed. Some stages overlap in practice; this is critical path, not the sum of all activity.

| Twenty-five months gone. Why does that matter so much?

DURATION, NOT COST

The same margin, on a different clock, is a different asset class.

25% MARGIN · 32 MONTHS

≈9%

Below the hurdle rate of almost every risk-capital pool.

25% MARGIN · 7 MONTHS

≈47%

Identical margin, identical product. Only the clock changed.

10% MARGIN · 7 MONTHS

≈18%

The consequential number. Double today's return at 40% of the margin.

A 25% margin over 32 months annualises to about 9% — below the hurdle rate of almost every risk-capital pool. The identical margin over 7 months is about 47%. And a 10% margin over 7 months is about 18%: double today's return at 40% of the margin.

INVESTORS

Housing is not underfunded because investors doubt the market. It is underfunded because the learning cycle is longer than a fund's life. Software invalidates a hypothesis in twelve to eighteen months for a couple of million dollars; housing takes three to five years and tens of millions. No amount of conviction fixes arithmetic about how risk capital forms.

POLICYMAKERS

Read the third card. Speed converts directly into a lower price without anyone accepting a worse return. That is the mechanism by which a process reform reaches a household — and it is why the argument is about time rather than subsidy.

RESEARCH

Illustrative calculations on stated assumptions, not measured outcomes. Gross margin on total project cost; ignores leverage, which amplifies the effect in both directions. And the argument is specifically about iteration rate, not capital volume — a version of this that argues for more money rather than faster learning is arguing for the wrong thing.

So what is all of that actually worth, and to whom?

MOVEMENT 5 OF 5 · CONCLUSION

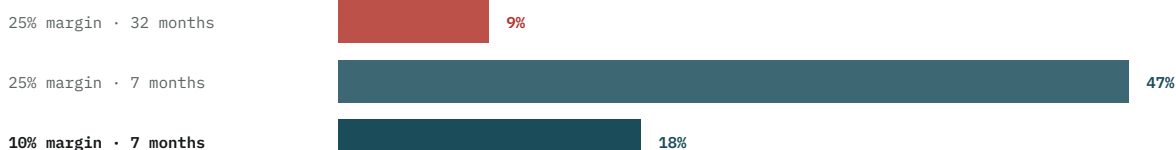
CONCLUSION

What it is worth, who must want it,
and what would kill it

WHAT TWENTY-FIVE MONTHS IS WORTH

Not a market size — a per-unit arithmetic anyone can check, and one measured precedent that the saving reaches residents.

ANNUALISED RETURN ON AN IDENTICAL BUILD



The third bar is the one that matters: a lower price, not a fatter margin.

Regulation is 26.4% of a new home's price — the pool the saving comes out of. Auckland rents came in 23-28% below counterfactual — measured proof it reaches residents. No market size is claimed, because none has been estimated; the bars are illustrative arithmetic on stated assumptions, and only Auckland is measured.

Regulation is roughly a quarter of the price of a new American home, and that is the pool any saving comes out of. On a seven-month cycle a ten percent margin still returns about eighteen percent — double what a twenty-five percent margin returns over thirty-two months. Speed converts directly into a lower price without anyone accepting a worse return. And Auckland is the measured precedent that the saving reaches residents rather than capitalising entirely into land.

INVESTORS

An identical margin on a different clock is a different asset class — nine percent against forty-seven. That is the difference between an asset only patient real-estate capital will hold and one a portfolio strategy can underwrite.

POLICYMAKERS

The reason to care is the third figure. Auckland is a supply reform that measurably reached renters at scale — rents twenty-three to twenty-eight percent below the counterfactual. That is the outcome housing policy usually tries and fails to buy directly.

RESEARCH

The first figure comes from a trade association advocating deregulation and is graded accordingly. The bars are illustrative arithmetic on stated assumptions, not measured outcomes. Only Auckland is measured, and it measures upzoning rather than this. No market size is claimed because none has been estimated.

REGISTER [E-001](#) [E-031](#) [CHECK THESE ROWS →](#)

All of which is worth nothing unless the people who must act actually want it.

WHO GAINS, AND HOW MUCH

Nine parties, and an honest column saying which figures are measured, which are arithmetic, and which are blank.

WHO GAINS	WHAT CHANGES FOR THEM	HOW MUCH	ON WHAT BASIS
The builder	Certainty before optioning land; capital turns four times as often	9% → 47% annualised on an identical margin	Illustrative arithmetic, stated assumptions
The buyer	A price quoted before commitment, and a mortgage rather than a chattel loan	10% margin at 7 months still doubles today's return — so speed can go to price	Illustrative arithmetic, stated assumptions
The renter	Supply that actually responds	Rents 23–28% below counterfactual	Measured — Auckland, a six and eight years
The lender	A valuation record instead of an appraisal resolved at closing	Closes a gap of <30% vs >70% loan approval, 5.61% vs 1.20% spreads	Measured — the gap, not the fix
The jurisdiction	Throughput and instrumentation without adding staff	7 agencies, consolidated answer, 20 working days	Measured — Singapore, in production
The producer	Forecastable utilisation against a committed book	—	Unquantified — nobody has tested it
The insurer	A priced, bounded, repeatable line where none exists	—	Unquantified — never written

WHO GAINS	WHAT CHANGES FOR THEM	HOW MUCH	ON WHAT BASIS
The legislator	A reform that can be shown to have worked	—	Unquantified — no state instruments this
The incumbent homeowner	Nothing — and holds a share of the \$48 trillion that nearby supply dilutes	The opposition, and it is rational	Structural

THREE ROWS ARE MEASURED, AND EVERY ONE OF THOSE WAS MEASURED SOMEWHERE ELSE. TWO ARE ARITHMETIC ON STATED ASSUMPTIONS. THREE ARE HONESTLY BLANK — NO AGGREGATE FIGURE FOR THE ECONOMY IS OFFERED HERE, BECAUSE NOBODY HAS PRODUCED ONE.

The builder gets certainty before optioning land and capital that turns four times as often. The buyer gets a price quoted before commitment. The renter gets supply that actually responds. The lender gets a valuation record instead of an appraisal resolved at closing; the insurer gets a priced, bounded line where none exists; the producer gets forecastable utilisation. The jurisdiction gets throughput without adding staff, and the legislator gets a reform that can be shown to have worked. The incumbent homeowner gets nothing — and holds a share of the \$48 trillion that nearby supply dilutes. Three of those gains are measured, two are arithmetic on stated assumptions, and three are honestly blank.

INVESTORS

Eight aligned parties and one structural opponent is an unusually good ratio for housing, and it is why segment selection is the first move rather than an afterthought. Note also which rows are blank: the producer, the insurer and the legislator gain in ways nobody has yet put a number on.

POLICYMAKERS

The last row is the political problem, and argument does not solve it — choosing ground where the incumbent is also the builder does. Arizona is the test: the casita bills passed, the starter-homes bill died twice.

RESEARCH

Note how many rows read unquantified. That is the honest state of this, not a gap in the table — and the opponent's row is the one nobody should model as ignorance. Any

version of this argument that treats opposition as a communications problem has misread the structure it is describing.

REGISTER [E-031](#) [E-009](#) [E-011](#) [E-021](#) [E-027](#) [E-055](#) [CHECK THESE ROWS →](#)

So what does a country with this in it actually look like?

WHAT ONE LOCK, TURNED ONCE, ACTUALLY PRODUCED

The most useful thing about Auckland is not its size. It is that somebody measured it.

THE ONLY PLACE ONE LOCK HAS BEEN TURNED AND MEASURED

+21,808

ADDITIONAL HOMES CONSENTED IN FIVE YEARS
ABOUT 4% OF THE HOUSING STOCK

2×

BUILDING PERMITS PER CAPITA
AGAINST THE COUNTERFACTUAL

−23–28%

RENTS AGAINST THE COUNTERFACTUAL
AT SIX AND EIGHT YEARS

That is one lock, turned once, in one city of 1.7 million. Three locks turned across twenty thousand jurisdictions has never been tried, cannot be extrapolated from a single case, and is not being claimed here. What Auckland establishes is narrower and more useful: that when supply actually responds, the saving reaches the people who live there rather than capitalising entirely into land. That was the objection everyone raised, and it is the one that has been answered by measurement.

Auckland upzoned three-quarters of its residential land in 2016. Five years on, an additional 21,808 homes had been consented — about four percent of the housing stock — and permits per capita had doubled against the counterfactual. Eight years on, rents were twenty-three percent below where the synthetic control says they would have been, with a separate study putting them twenty-eight percent below at six years, and Lower Hutt replicating at twenty-one.

One reform, one city, and the effect is large enough to see through the noise eight years later. That is the closest thing to a proof of concept this field has.

POLICYMAKERS

This is the answer to the objection that supply reform is swallowed by land values. It is not an argument; it is a measurement, from a jurisdiction that did the thing and then let economists check.

RESEARCH

And it is one city of 1.7 million, turning one of three locks. It does not license extrapolation to twenty thousand American jurisdictions and none is offered here. What it establishes is narrower: that when supply genuinely responds, the saving reaches residents rather than capitalising entirely into land.

REGISTER [E-029](#) [E-030](#) [E-031](#) [CHECK THESE ROWS →](#)

That is what is established. Now the strongest arguments against all of it.

EIGHT OBJECTIONS, FIVE CONCESSIONS

Stated in their strongest form. Three are answered. Five are not — including the one with the best evidence behind it.

THE OBJECTION, IN ITS STRONGEST FORM	HOW IT ENDS	WHAT WOULD SETTLE IT
Savings capitalise into land. You are optimising a rounding error.	STILL OPEN	Auckland answered it for renters, not for buyers of a new type
Codes will not compile — discretion is the point, not an accident.	TEST FIRST	Gate 0. Two weeks, no capital
BIM code-checking was tried in America and went nowhere.	UNRESOLVED	Adoption incentives are unmodelled, and that is a real hole
This is permitting software — a crowded, low-margin category.	ANSWERED	Legal weight, not customer, is the distinction
Type certification means every house looks the same.	ANSWERED	Type approval governs the envelope, not the appearance
The real mechanism is firm size, and your fix may make it worse.	CONCEDED	The best causal evidence on the page, and it cuts against us
Every precedent you cite was political, not technological.	STANDING RISK	Correct on the premise; the two are complements, not substitutes
Trade labour is the constraint and no compiler fixes it.	ANSWERED	Partly idle capacity; the residual is real and not claimed solved

EIGHT OBJECTIONS. THREE ANSWERED, FIVE ENDING IN A CONCESSION — AND THE ONE WITH THE BEST CAUSAL EVIDENCE BEHIND IT IS THE ONE THAT CONTRADICTS THIS ARGUMENT.

Savings capitalise into land. Codes will not compile, because discretion is the point. BIM code-checking was tried here and went nowhere. This is just permitting software. Type certification means every house looks the same. The real mechanism is firm size. Every precedent cited was political, not technological. Trade labour is the constraint. Three of those are answered. The other five end in a concession — still open, test first, unresolved, conceded, standing risk.

INVESTORS

Five of the eight end in a concession. The firm-size objection is the one to read twice: it has the best causal evidence on the page, it is conceded outright, and it is directly in tension with the small-builder claim. Both cannot be the affordability mechanism, and that reconciliation is outstanding work owed before any raise.

POLICYMAKERS

The land-capitalisation objection is the one a housing economist will raise first, and it is now partially answered by measurement rather than argument: Auckland's rents came in 23–28% below counterfactual. Capitalisation is real, but it is not total.

RESEARCH

Each objection is stated at full strength and answered or conceded on the record, with the thing that would settle it named. Note the count has been corrected: the documents said nine objections and three conceded; there are eight, and five end in a concession.

REGISTER [E-016](#) [E-017](#) [E-031](#) [CHECK THESE ROWS →](#)

Five concessions. And four things nobody has measured at all.

THREE EMPTY ROWS

The two claims the argument leans on hardest are among the least evidenced. That is the shape of the opportunity.

UNTESTED

E-039 — **American codes are compilably objective.** The share of binding provisions that are objective rather than discretionary has never been measured, anywhere.

UNTESTED

E-037 — **Arizona's granted right produced throughput.** Statewide by-right casita rights took effect in 2026; permit volumes since are published nowhere.

UNTESTED

E-038 — **The full idea-to-sale cycle.** No dataset tracks a single project from site identification to closing.

And separately: whether a jurisdiction will accept an authoritative determination, and whether a carrier will insure it. Neither has been demonstrated.

E-039 — the share of binding provisions that are objective rather than discretionary. Never measured, anywhere. The single most load-bearing claim. E-037 — Arizona permit volume since preemption. Not published. E-038 — the full idea-to-sale cycle. Never measured end to end. And separately: whether a jurisdiction will accept an authoritative determination, and whether a carrier will insure it. Neither has been demonstrated.

INVESTORS

No gate has been cleared. This is a working thesis, pre-evidence-collection, and it is being presented as one.

POLICYMAKERS

Two of these three are things a state could measure for itself, cheaply, and does not. That absence is the most portable finding in this talk.

RESEARCH

Gaps are register rows too, recorded so they cannot be quietly forgotten. They are the research contribution, not a to-do list.

REGISTER [E-037](#) [E-038](#) [E-039](#) [CHECK THESE ROWS →](#)

Both gaps are cheap to close. Here is how.

FIVE THINGS, IN THIS ORDER

This is the whole plan, and every status on it currently reads: not yet.

01 Codes prove compilable

What share of binding provisions are objective rather than discretionary

UNMEASURED

02 A jurisdiction accepts an outside determination

In place of first-pass review, signed and insured

NEVER DEMONSTRATED

03 A carrier insures it

The determination becomes a priced, bounded risk

NEVER DEMONSTRATED

04 A lender values the type, not the comp

The lock that killed manufactured housing

NEVER DEMONSTRATED

05 A producer builds against a committed book

Utilisation becomes forecastable; the factory economics close

UNTESTED

Each link needs the one above it, and every status reads **not yet**. The first is two weeks of work.

Codes have to prove compilable. A jurisdiction has to accept a Lintel determination in place of first-pass review. A carrier has to insure that determination. A lender has to value a certified type rather than a comparable sale. A producer has to build against a committed book. Each link needs the one above it, which is why the order is not a preference — and every one of them is currently unproven. The order is itself falsifiable, and the conditions are named: if Arizona's granted right produced throughput unaided, information demotes to a convenience; if builders name utility

capacity rather than approval as the binding gate, the middle link is aimed wrongly; if binding provisions prove predominantly discretionary, the chain collapses to politics plus capital — the manufactured-housing path with modern finance.

INVESTORS

This is a dependency chain, not a schedule, and it is deliberately not a schedule — dates would be invented and the chain is what actually governs. Note where the value concentrates: links two and three are the wedge, link four is the endgame.

POLICYMAKERS

Two of these five are things a legislature can act on directly. A state that wanted this could authorise acceptance of an insured determination and require its jurisdictions to publish permit data — links two and five instrumented — without waiting for anyone's product.

RESEARCH

American law already reaches part of link two: several states preempt local authority over approved industrialised buildings, and interstate reciprocity recognises streamlined certification across state lines. None covers the site-plan scope, which is the gap.

REGISTER

E-039

E-051

E-047

E-049

E-037

CHECK THESE ROWS →

The first link is two weeks of work. Here it is.

TWO GATES, NO CAPITAL

Both experiments precede any capital commitment.

Both are publishable whichever way they come out.

GATE 0 · ~2 WEEKS · NO CAPITAL · FILLS E-039

COMPILABILITY OF A MUNICIPAL RULESET

Enumerate every provision applying to a defined project type in one mid-sized jurisdiction. Classify each objective, conditionally objective, or discretionary. Encode the objective set. Record hours per provision.

KILL CRITERION – if materially binding provisions are predominantly discretionary, the diagnosis is wrong and the first four layers need redesign.

GATE 1 · ~4 WEEKS · NO CAPITAL · FILLS E-037

DOES A GRANTED RIGHT PRODUCE THROUGHPUT?

Records requests across Arizona municipalities and counties for accessory-dwelling permit volumes, 2023–2026. Synthetic control against comparable metros. Ten to fifteen builder interviews mapping which gate actually binds.

EITHER WAY – that these figures are unpublished is itself a finding: a state passed a significant reform and built no instrumentation to determine whether it worked.

Gate 0, about two weeks: take one mid-sized jurisdiction's zoning ordinance and adopted building code, enumerate every provision applying to a defined project type, classify each as objective, conditionally objective or discretionary, and attempt to encode the objective set. Record encoding hours per provision. Gate 1, about four weeks: records requests across Arizona municipalities and counties for accessory-dwelling permit volumes 2023–2026, synthetic control against comparable metros, plus ten to fifteen builder interviews mapping which gate actually binds.

If materially binding provisions prove predominantly discretionary, the diagnosis is wrong and the first four layers need redesign. That is the kill criterion, and it costs two weeks to reach.

POLICYMAKERS

Gate 1 is a records request. Any state could run it on its own reforms, and the finding belongs in the public record regardless of who collects it.

RESEARCH

Even a negative result is publishable and novel — nobody has measured the objective/discretionary split of American zoning. A paper reporting it would be cited regardless of which way it comes out.

REGISTER E-039 E-037 CHECK THESE ROWS →

Run either one and this argument changes. That is the point.

NO GATE HAS BEEN CLEARED

The ask is not money. It is the test.

FALSIFICATION STATEMENT — FILED BEFORE EVIDENCE COLLECTION, AUGUST 2026

This thesis fails if (a) binding provisions prove predominantly discretionary and therefore non-compilable; or (b) encoding cost per jurisdiction does not fall below the threshold implied by the addressable market; or (c) builders predominantly identify utility capacity or fire-district sign-off, rather than approval-side gates, as the critical path on recent projects.

It is **materially weakened** if the firm-size mechanism dominates — in which case type certification addresses a problem adjacent to the real one.

Every one of these is cheap to test and none has been tested. That is the current state of this project, stated plainly.

This thesis fails if binding provisions prove predominantly discretionary and therefore non-compilable; or if encoding cost per jurisdiction does not fall below the threshold implied by the addressable market; or if builders predominantly identify utility capacity or fire-district sign-off, rather than approval-side gates, as the critical path on recent projects. It is materially weakened if the firm-size mechanism dominates. Every one of those is cheap to test and none has been tested. That is the current state of this project, stated plainly.

INVESTORS

Filed before evidence collection, in August 2026, in public. Everything here is graded, sourced and revisable — and the first finding gets published under a research identity whichever way it comes out.

POLICYMAKERS

The offer is instrumentation. A reform that nobody measures cannot be defended when it is challenged, and right now none of them are being measured.

RESEARCH

Stated before the evidence rather than after it, which is the only time a falsification statement is worth anything.

And if only three things survive this, make it these.

THREE THINGS

If nothing else survives this, these should — and each one fits in a sentence.

01



A BIG PROBLEM, PRECISELY LOCATED.

Thirty-two months to deliver an American home. Eight of them build it. The other twenty-four are information, waiting and risk — and that is the part nobody has attacked.

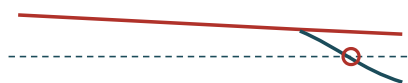
02



THREE LOCKS, IN A FIXED ORDER.

Politics decides whether you may enter. Information decides whether anything moves. Capital decides whether it survives. Four serious attempts each turned one and were killed by another.

03



A NEW TOOL — AND A PLAN THAT USES IT.

Turning one jurisdiction's prose rules into executable logic took Singapore twenty-eight years by hand. Language models can now do much of that reading and drafting, so the cost collapsed about three years ago — and the plan that follows covers all three locks in order, which is what the four failures did not.

One: it takes thirty-two months to deliver an American home and only eight of them build it — the rest is information, waiting and risk, and that is the part nobody has ever attacked. Two: three things block it, in a fixed order — politics decides whether you may enter, information decides whether anything moves, capital decides whether it survives — and four serious attempts each turned one lock and were killed by another.

Three: hand-translating a jurisdiction's rules took Singapore twenty-eight years, language models can now do much of that work, so the cost collapsed about three years ago — and the plan that follows covers all three locks in order rather than one.

INVESTORS

The opening is real, it is unpriced because nobody has recomputed the number that closed it, and the first test costs two weeks and no capital.

POLICYMAKERS

Two of the three empty rows are things a state could measure on its own reforms, cheaply, and none currently does. That absence is the most portable finding here.

RESEARCH

Every number behind those three sentences is graded and sourced, three of the supporting rows are deliberately empty, and the falsification statement was filed before any evidence was collected.

REGISTER [E-002](#) [E-023](#) [E-051](#) [E-038](#) [CHECK THESE ROWS →](#)

END WHERE TO GO NEXT

EVERYTHING HERE IS CHECKABLE

01 • BROWSE

THE EVIDENCE REGISTER

Fifty-seven claims, each with source, grade and review date — including the four rows nobody has measured.

→ [/evidence](#)

02 • 45 MIN

THE FULL THESIS

Thirteen sheets. The same argument at full length, with the seven-layer architecture and nine objections in their strongest form.

→ [/thesis](#)

03 • 10 MIN

THE SEQUENCE

Three locks, the stage rail, the four orderings that have actually been run and failed, and the five results that would rewrite it.

→ `/ordering`

04 • 20 MIN

PRESENT IT

The same thirty-two beats as a keyboard-driven deck. Arrow keys to move, S for presenter notes, P to print to PDF.

→ `/presentation`

WORKING THESIS • NO GATE CLEARED • EVERY CLAIM GRADED AND SOURCED • REV. AUG 2026
TWENTY THOUSAND UNCOMPILED CODEBASES • DOC HAP-08 REV 1.0 • NARRATIVE BUILT FROM
THE SAME BEAT SHEET AS THE DECK • EVIDENCE REGISTER