SAMPLE

Building the Decentralized Finance of Tomorrow

A Practical Guide to Programmable Money, Open Markets, and the Future of Financial Services

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Contents

Introduction: The Bank in the Code

Chapter 1: The Definition — What Decentralized Finance Is

Chapter 2: The Honest Limits

Chapter 3: The Classic Mistakes

Chapter 4: The Foundations — The Market Mechanisms

Chapter 5: The Build — Designing a Safe Practice

Chapter 6: The Deployment — Running the Positions

Chapter 7: The Deep Dive — A Position's Anatomy

Chapter 8: The Deployments — Case Studies

Chapter 9: The Audit

Chapter 10: The Decade Ahead

Connect

About this Series

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Introduction: The Bank in the Code

Money has always needed a place to live. For most of recorded history it lived in other people's buildings: the temple vaults that held grain for a fee, the goldsmiths' ledgers that became banks, the clearing houses that settled the exchanges, the card networks that moved the balances. Every financial service the modern reader uses is a building with an owner: a lender who decides who qualifies, an exchange that decides what trades, a custodian who decides who may withdraw, an insurer who decides what was covered. The buildings are convenient, regulated, and frequently trustworthy. They are also, in every crisis the ledger has recorded, the single point where the whole system's promises depend on the operator's solvency, honesty, and good week.

Decentralized finance is the decade's most audacious answer to that architecture: the proposal that the services themselves — the lending, the trading, the market-making, the insuring, even the issuance of money-like instruments — can be programs running on public networks, open to anyone, custodied by no one, and operating by rules that no operator can bend after the fact. Not a new bank, and not a better bank: the removal of the bank as a necessary counterparty from services that people have always needed. The proposal is young, loud, wildly profitable for some of its early users, and expensive for many others — the field's first decade has produced both genuinely functioning markets that clear millions in value daily without a single employee, and some of the fastest total losses in financial history, when a flawed program met a liquid market.

This volume treats the subject the way its siblings treat theirs: as an engineering discipline with an honest risk profile, written for the professional and the serious newcomer, with no vendor names, no endorsements, and no forecasts dressed as facts. The chapters ahead sort the real machine from the marketing, because the buyer who cannot state what a lending protocol actually does with a deposit cannot survive the field's catalog of tuition. The ten chapters run in this order: the definition first, and the honest limits second — volatility, contract risk, oracle dependence, liquidity, governance, and regulation among them; the classic mistakes third, catalogued from the field's own failure record; the foundations fourth — the market mechanisms themselves, explained from the arithmetic up; the build fifth, the deployment sixth, and a working position's anatomy seventh, drawn layer by layer; the composites eighth, the audit ninth, and the decade tenth.

The reader who finishes the volume holds the same instrument every sibling volume issues: the questions that make the wrong pitch end in the first minute, and the wrong position never open at all.

Chapter 1: The Definition — What Decentralized Finance Is

The honest definition begins where the subject's marketing never does: with what decentralized finance removes rather than what it adds. Every traditional financial service has the same five components — an operator who runs it, a ledger that records it, a rulebook that governs it, a custody arrangement that holds the value, and an access policy that decides who may use it. The traditional bundle sells all five as one product from one building: the bank is simultaneously the operator, the ledger-keeper, the rule-maker, the custodian, and the gatekeeper, and the customer's only real choice is which building to trust.

Decentralized finance is the proposal to unbundle those five components and re-derive them from public infrastructure: the ledger becomes the network's own (the shared, verifiable record from the sibling volume on the underlying technology); the rulebook becomes the program (its terms public, its enforcement automatic); the custody becomes the user's own keys or a contract the user controls; the access policy becomes mathematics rather than paperwork — anyone who can sign a transaction can use the service, with no account approval, no minimum balance, and no jurisdiction's form to file. What remains genuinely human is the operator's share: someone still designs the program, someone still upgrades it, and someone still holds the administrative keys that govern it — and the honest definition of the field measures its own maturity by how small and how audited that residual human share has become.

The definition's working form, then, is a test rather than a slogan: a service is decentralized finance to the exact degree that its ledger is public, its rules are programs, its custody is the user's own, and its access is permissionless — and to the degree any component fails that test, the service is a traditional operation wearing the field's vocabulary, priced by the failure chapter of the volume that taught the reader to read it.

Each unbundled component deserves its own paragraph, because each carries a price the marketing omits and the definition's honesty must quote. The public ledger buys verifiability at the cost of transparency: every position is visible to anyone — a feature for auditors, a hazard for traders whose strategies leak with every transaction. The program rulebook buys certainty at the cost of rigidity: the terms cannot be bent for the hard case, the exception, or the mercy — the loan that should have been extended cannot be, and the one that should not have been made will be liquidated exactly on schedule.

The self-custody buys sovereignty at the cost of responsibility: the keys that cannot be frozen by a bank also cannot be restored by one. The permissionless access buys universality at the cost of frictionlessness for the honest and the dishonest alike: the same service opens for the saver in a country with no banking and for the launderer with a wallet full of the morning's theft.

And the residual operator — the team, the treasury, the governance keys — buys the field's speed of innovation at the cost of the field's whole trust question: the reader's audit of any service ends, without exception, at the question of what those humans can still change.

Stripped of its decade of vocabulary, the machine is simple enough to state in one sitting. A user holds value on a public network in their own keys. A program on that network offers a service: to lend the value out at a rate, to exchange it for another asset at a market price, to pool it with strangers' value to earn trading fees, or to insure it against named risks. The user signs one transaction that moves their value into the program's control under the program's published terms, and the network itself enforces what happens next: the interest that accrues by the block, the exchange that settles by the arithmetic, the liquidation that executes when the collateral's price crosses the line the program drew.

No employee touches the flow; no clerk approves it; no institution can reverse it after the fact. The service's whole personality — its rates, its risks, its fees, its failure modes — lives in the program's code and the market that surrounds it, both public, both auditable, and both fully described in the chapters that follow. That one paragraph, understood deeply, is the whole subject; the rest of the volume is its honest elaboration.

The field's vocabulary has been borrowed freely by operations that fail the test, and the reader deserves the exclusions stated plainly. A lending service operated by a company, with accounts and approvals and a balance sheet, is a lender — perhaps a good one — but its ledger is private, its rules are policies, and its custody is the company's; the reader's recourse is a court, which is exactly the traditional product. An exchange that holds the customer's balances is a custodian wearing the field's interface, priced by the previous volume's counterparty chapter. A "yield" paid from a token's own issuance is not finance at all — it is the countdown this catalog prices in its mistakes chapter — and a service whose governance keys sit in one team's multisig is, whatever its marketing, a fund with a very good newsletter.

None of these exclusions make the services dishonest; they make them different, and the definition's whole practical value is that it prices the difference before the reader's money does: the program's promise is enforced

by mathematics, and the company's promise is enforced by lawyers, and the decade's losses are concentrated in exactly the positions that believed they had bought the first while they had actually bought the second.

The volume's first tool compresses the whole chapter to a minute's questions, asked in order and answered in writing before any value moves. First: where does the service's ledger live — a public network the reader can verify, or a private database the operator maintains? Second: who enforces the terms — code the reader can read or have audited, or a policy the operator may change? Third: who holds the value between the signature and the exit — the reader's own keys, a contract the reader controls, or the operator's custody? Fourth: who may use the service — anyone with a signature, or only the approved, the accredited, and the jurisdictionally convenient?

Fifth: what can the team still change — the parameters, the fees, the code itself, and by what procedure, with what delay, and witnessed by whom? Five answers, one minute, and the service sorts itself: the more answers that land on the public, the programmatic, the self-custodied, and the permissionless, the more the service is the field's genuine subject — and the more answers that land on the operator, the more the service is the traditional system with a costume on, and the reader prices it with the traditional system's tools, which begin with the question the costume was designed to pre-empt: who exactly is holding my money, and what happens to it if they have a bad year?

A fair question deserves a fair answer: the traditional buildings work, most of the time, for most of the people who can access them — so why does the unbundling matter at all? The definition's honest answer runs on three lines. The first is access: the planet's unbanked population is measured in the hundreds of millions, and the traditional gatekeeping — the minimum balances, the paperwork, the branch geography, the risk appetites of the institutions that decide whole neighborhoods are not worth serving — is a solvable engineering problem once the service is a program that opens for any signature.

The second is settlement: the traditional stack's clearing and reconciliation is a days-long, multi-institution choreography with real costs and real counterparty risks; the programmatic stack settles with finality in minutes or seconds, and the difference compounds through every corridor and supply chain that touches money. The third is composability — the field's genuine invention: programs that anyone can write, calling programs that anyone else wrote, create an innovation surface that no licensed institution can match, because the traditional building must underwrite every product it offers, while the programmatic market lets a thousand experiments run with the participants'

own money at their own risk.

Three honest lines, and the honest coda: the same three properties that make the field matter make it dangerous in exactly the same degree — access without gatekeeping admits harm as readily as need, settlement with finality removes the reversal period that caught a century of errors, and composability connects a thousand experiments into a single chain of dominoes. The definition chapter's closing charge to the reader: hold the unbundling's promise and its hazard in one hand, because every chapter that follows is built on the assumption that the reader has done so — the field's honest education has no other kind of graduate.

The chapter closes by sorting the decade's vocabulary into its honest piles, because the field's buzzwords are a map of its real components and the reader deserves the legend. The protocols are the services themselves — the lending programs, the exchange programs, the stablecoin issuers — the buildings' replacements. The liquidity pools are the strangers' pooled value that the exchanges and markets draw on, priced by the arithmetic of their curves. The oracles are the pipes that carry prices from the outside world into the programs, priced by their failure modes in the limits chapter.

The governance tokens are the residual operator's shares — the votes over what the team can still change — and the reader who treats them as equity is applying the wrong volume's analysis, as the composites chapter will show. The yield — the field's loudest word — is simply a revenue stream from a real activity (trading fees, interest, issuance), and the honest audit's first question about any yield is the same one a dividend analyst would ask: paid from what? The wallet is the reader's own keys and the interface to them, the custody chapter of the sibling volume wearing the field's clothes.

And the gas — the network's fee for computation — is the meter running under every service, the line item the marketing never quotes and the limits chapter always does. Seven piles, seven honest labels, and a decade of headlines sorted into an engineering drawing — which is the definition chapter's final deliverable, and the volume's working assumption from this page forward.

The definition deserves a lineage paragraph, because the field did not invent finance — it re-hosted it, and the reader who knows the lineage reads the decade's arguments with their volume numbers attached. The lending pool is the mutual fund's grandmother: strangers' capital, pooled, lent out at a market rate, the share being the claim — the field's version simply runs the manager as arithmetic. The automated exchange is the specialist's post, automated: the quote that always stands, the spread that always pays the poster, the reader's

pool share being the seat the exchanges used to lease.

The collateralized loan is the pawnbroker's oldest contract — value locked, value lent, the line drawn before the door opens — at the machine's speed, with the machine's certainty. The stable instrument is the money market fund's dollar, re-engineered: the claim on reserves, the redeemable share, the run's physics — all three inherited, not invented. And the governance token is the exchange's seat again, wearing the decade's vocabulary: a share of the residual operator's powers, priced by the market's belief in the operator's future. The lineage's honest lesson, held once for the reader who will hear the decade's "revolution" arguments: every mechanism in this field has a century's ancestor, and the field's genuine novelty is narrower and harder — the ancestors' enforcement was an institution; the field's enforcement is arithmetic; and the honest argument the decade is actually having is whether that substitution is worth its price, which is a question this volume has been built to let the reader answer with their own arithmetic rather than anyone's slogans.

The chapter closes with the coda the sibling volumes print at their definitions' ends: the definition is not a verdict, and the field it defines is not a promise. The genuine services — the ones that pass the pocket test's four answers — are engineering with an honest risk profile: auditable, permissionless, final, and dangerous in exactly the proportion they are useful. The costumes — the companies wearing the vocabulary — are the traditional system, priced by the traditional rules, which are good rules and which the costume exists to avoid. Stated once at the chapter's end, the definition serves a single purpose: it lets the reader sort the costume from the service inside a minute — over dinner, on a website, in the loudest week of any season — since nearly every unit of this field's recorded tuition came from participants who never could.

What follows is that sorting, elaborated into a working instrument: the limits the machine will not waive, the mistakes the record has already billed, the mechanisms done on paper, the practice that carries them, and the audit that makes the final call — each resting on the sorting just learned, which is why the definition opens the book, and why everything else is built upon it.

The definition chapter owes the reader the subject's context, stated once without the decade's politics: the field emerged from the underlying technology's own maturity — the settlement layers proved their arithmetic through two full cycles, the contract-hosting capability arrived, and the first programs that offered financial services without an operator's balance sheet followed within a season. The earliest versions were the field's proof of concept: the lending pools and the exchange curves, simple, auditable, and

instantly popular — and the decade's subsequent history is the working-out of their honest implications: the composition's invention and its dominoes, the instruments' engineering and their de-pegs, the governance's promise and its midnights, the runs' arrival at the machine's own speed, and the institutions' slow, licensed entrance through the drafts.

The paragraph's honest purpose, held once for the reader who will hear the field's origin argued: the subject was not invented by its marketing, and it was not discredited by its failures — it is a young engineering discipline with a real mechanism at its center, and the chapters that follow treat it the way the series treats every young machine: by its physics, its tuition, and its practice, not by its loudest decade's headlines, which are the case chapter's material and never the definition's.

The chapter's final deliverable is the pocket card — the definition compressed to the card's ten lines, carried to every dinner, every website, and every season's pitch the decade will serve. The card, printed in full: One — a service is this field's subject to the exact degree its ledger is public, its terms are programs, its custody is the user's own, and its access is permissionless. Two — the degree that fails is the degree the service is a company wearing the vocabulary, priced by the traditional tools. Three — the program's promise is enforced by arithmetic; the company's promise is enforced by lawyers; the position's recourse is whichever one it actually holds.

Four — the unbundling's three honest goods are access, settlement, and composition; its three honest costs are the gatekeeping's absence, the finality's mercy, and the dominoes' correlation. Five — every mechanism has a century's ancestor; the novelty is the enforcement's substitution — institution for arithmetic — and the argument the decade is having is whether the substitution is worth its price. Six — the residual operator is the field's whole trust question: someone designs, upgrades, and holds the keys, and the audit ends at their powers. Seven — the vocabulary sorts into seven piles — protocols, pools, oracles, tokens, yields, wallets, and gas — and the legend is this card.

Eight — the test runs in a minute: ledger, terms, custody, access, powers — five answers, written. Nine — the position sized before the test is the catalog's tuition, prepaid; the position sized after it is the market's. Ten — the card is the volume's first chapter; the binder is its ninth; the reader who carries both holds the field's whole honest education at the pocket's size, which is the definition's final form and the series' standing deliverable.

The chapter closes with the exercise the sibling volumes assign at their first chapter's end, because the definition is a skill rather than a page, and skills

are installed by use. The exercise, run this week at the reader's own pace: take one service the reader has actually used or heard pitched — a savings account, a lending app, an exchange — and run the pocket test's five questions against it, in writing: where does its ledger live, who enforces its terms, who holds the value between signature and exit, who may use it, and what can its operators still change?

Then take one of the field's genuine protocols, named in the reader's own research and never in this volume, and run the same five. Compare the two answers side by side, and note what each service's design buys and what it costs — the traditional service's recourse against the program's arithmetic, the account's reversibility against the signature's finality, the officer's mercy against the ratio's line. The exercise's honest product, held where the first position will open: the reader who has run both tests once holds the definition in the only form that survives the decade — the practiced reading, applied to whatever the decade pitches next, at the first minute, in the reader's own handwriting — which is the exercise's whole purpose, and the first chapter's honest graduation.

The definition's final honesty belongs to the field's feelings, because the reader arrives at this subject through a decade of them — the euphoria of the seasons, the grief of the collapses, the contempt of the observers, the conviction of the converted — and the honest book prices the feelings' place at the definition's end. The working form: the feelings are real data about the participants, and they are zero data about the machine. The protocol's code does not run faster on conviction, price itself higher on euphoria, or fail more gently on grief — the machine's arithmetic is the same text in every market's mood, and the definition's whole discipline, installed at the first chapter, is the practiced separation of the two ledgers: what the machine is, printed in its code and priced by its limits; and what the crowd feels about it, printed in the season's headlines and priced by nothing in this volume.

The paragraph's honest close, held where the next season's mood will find the reader: the participant who holds the separation holds the field's only durable temperament — interested in every machine, convinced by none, and priced by their own arithmetic rather than the crowd's feelings — and the chapters that follow are the separation's working instruments, printed for exactly the seasons that test it.

The chapter's true close states the definition in one line, because the pocket card's ten lines are the instrument and the one line is the instrument's point: decentralized finance is the practice of holding financial services whose ledger, rules, custody, and access are the network's rather than the operator's

— with the operator's residual powers priced, in writing, before the position opens. The line's three honest clauses, held once at the volume's first end: the services are real and their mechanisms are the foundations' four, computed by hand; the substitution is the wager, and its costs are the limits' seven, quoted in advance; and the residual powers are the audit's whole subject, because the field's maturity is measured — the definition's honest metric, printed for the decade's regulators and the reader's diligence alike — by exactly how small, how slow, and how visible the operator's remaining signature has been made, which is the question the reader now knows how to ask at the first minute, and the only one the field has ever needed to answer honestly, for the machine to be what its decade has claimed it is: not a new bank, and not a better one — the financial service, held.

The exercise's close owes the reader the key's honest form, because the five questions have a scoring the reader should know before they run the test on the decade's next pitch: the answers are not yes and no — they are degrees, and the degree is the position's honest size. The ledger's degree: fully public (verifiable by the reader's own node) to fully private (the operator's database), with the middle's block explorers priced as trust, not verification. The terms' degree: fully programmatic (the deployed code, audited) to fully discretionary (the policy page), with the middle's "code plus admin keys" priced by the keys' powers.

The custody's degree: self-held (the reader's own keys) to fully custodied (the operator's), with the contract-custodied middle priced by the contract's text. The access' degree: permissionless (any signature) to gated (the paperwork), with the middle's geofences priced as the jurisdiction's, not the machine's. And the powers' degree: none (the timelocked, audited, quorum-bound minimum) to absolute (the multisig that can do anything today), with every degree between priced by the delay the reader can watch. Five degrees, one honest score, and the key's final line, printed for the test's every future use: the degree that fails is the degree the traditional tools price — and the traditional tools are good tools, printed in every sibling volume's catalog, that the reader now holds alongside the field's, at the first minute, for every costume the decade will ever wear.

End of free sample. The full book is available at putrabooks.github.io

ABOUT THE AUTHOR

Aiman JoeHanz writes the Building of Tomorrow series -- structural, vendor-neutral guides to the technologies reshaping industry, labor, and daily life. Each volume treats one technology the way an engineer treats a machine: definition first, then anatomy, failure modes, principles, build, deployment, and the honest decade ahead.