Solieum

LAYER 2 FOR SOLANA

Fast off-chain. Final on Solana.

Solieum is an optimistic rollup that settles to Solana. Transactions run off-chain in a Solana Virtual Machine, the data needed to check them is published on Solana, and the resulting state root is committed to a Solana program that will not finalize it if anyone proves it wrong.

solieum.com | Pitch deck | Read the docs | Telegram

BY THE NUMBERS

100 ms
A block every 100 milliseconds when there is work: the devnet chains' setting.

48 h
Challenge window before a posted state root becomes final.

32 B
One root per batch carries the whole chain's state to Solana.

SVM
Agave's own virtual machine, forked for bug-for-bug compatibility.

FAILED TRANSACTIONS

Built · running on devnet

On Solieum, a failed transaction costs nothing

ON SOLANA

Fee paid

A quarter to a third of non-vote transactions execute and fail, and every one of them still pays its fee.

ON SOLIEUM

0 SOL

A transaction that would fail is run when you submit it and refused right there, with the program's own error and logs. It never reaches a block and is never charged.

- **Not a trade guarantee.** Slippage still refuses and a race still has one winner. Being told no is free and takes milliseconds.
- **Not finality.** Every transaction in a block succeeded, but a block still settles on the usual schedule.
- **One exception.** Forced-inclusion entries posted through Solana are not checked first, so they can still fail.

Decided in ADR-0014. Solana figure: solieum.com/solana-failed-transactions.

A worked example: two buyers, one item left

Alice sends just before Bob. Only one of them can get the item on either chain. What differs is what Bob pays, and when he finds out.

ON SOLANA

1. **Send.** Both are built against "one item left" and both pass simulation.
2. **In flight.** A leader neither picked orders them among everyone's traffic.
3. **Execute.** Alice's buys the item. Bob's runs next: sold out.
4. **Result.** Both land in a block. Bob's is recorded as failed, and he paid the fee.

Bob: failed on chain, fee paid

ON SOLIEUM

1. **Alice sends.** Her transaction runs against the block being built. It succeeds, is admitted, and she gets a receipt.
2. **Bob sends.** His runs against that same block, Alice's purchase included: sold out.
3. **Refused.** Turned away at once with the program's own error. No position, no receipt, no block.
4. **Seal.** The block is sealed and Alice's succeeds again, exactly as at admission.

Bob: told no in milliseconds, 0 SOL

Bob still does not get the item. Losing the race just costs nothing. Order of events only; no timings are claimed.

HOW IT WORKS

How a transaction becomes final

Four components carry the design: the sequencer, data availability, settlement and the dispute game. Solana is the judge at every step that matters.

You send a transaction

The sequencer signs a receipt that fixes its batch and position before execution. Two receipts for the same slot are a contradiction anyone can prove, and the proof takes the sequencer's bond.

It executes off-chain in the SVM

The same virtual machine Solana runs, so programs behave identically. A block seals every 100 milliseconds.

The batch is published on Solana

Compressed and committed on Solana itself, so anyone can rebuild the chain from scratch. No external data layer.

A state root is posted under a bond

One 32-byte root per batch goes into the settlement program on Solana.

48 hours to challenge

Anyone who disagrees opens a dispute. Challenger and proposer bisect the trace until one instruction is in question, and Solana executes that step to decide.

Final

A root is final only if its parent is final and its window passed unchallenged. Withdrawals verify against final roots only.

DRAWING THE LINE

What Solieum is not

Not a sidechain

No Solieum validator set decides state or finality. A sequencer decides ordering only. Finality stays with Solana.

Not a validium

Batch data is published on Solana, not to an external availability layer. "Secured by Solana" stays true without a footnote.

Not a new VM

Solieum forks Agave's SVM instead of reimplementing it. A harness replays identical blocks on different machines and compares roots byte for byte.

WHY A LAYER 2 ON SOLANA

Four reasons, checked against what runs

Solana is fast. Some apps still need what a shared chain cannot promise. These are the usual four reasons, and where Solieum stands on each today.

● LIVE ON DEVNET

Dedicated blockspace

Its own sequencer and its own blocks. A trading rush on Solana does not delay a Solieum transaction or change its flat 5,000-lamport fee.

The operator still pays more to post data to Solana when Solana is busy.

● MEASURED

Fast confirmation

A signed receipt in 14 ms, and the transaction in a block in about 100 ms, on the gamma devnet chain running 100 ms blocks.

Medians, 13 Nov 2026, sender on the node's machine. Sub-millisecond is not claimed. Final on Solana after the 48-hour window.

● IN PROGRESS

A chain shaped to the app

Solana's own runtime, not the EVM, so Solana programs run unchanged. Each chain runs exactly the programs fixed at its start, with its own block time.

Gas-free use for an app's users is not built.

● NOT BUILT

Compliance lanes

No KYC or private-transaction system exists. A permissioned lane must not undo forced inclusion, which guarantees nobody can be shut out.

Decided in ADR-0063: compliance lives in an app's own programs, never in who can reach the chain or leave it.

WHERE IT STANDS · SEPTEMBER 2026

Live on Solana devnet. Not on mainnet.

Every claim Solieum publishes comes with the basis it rests on. Here is the current one.

Public devnet chain
No mainnet, no public endpoint, no user funds.

Single sequencer
One bonded operator, signing receipts, drained by forced inclusion every block.

Disputes enforce
The dispute program is the settlement program's authority, so a verdict counts.

Not audited
Holding nobody's money until it is.

- Settlement
- Data availability
- Forced-inclusion inbox
- Dispute game
- Bridge portal
- Sequencer bond

About SEU, the native coin. SEU runs on Solieum's own devnet chains with test value only. There is no mint on Solana, no public sale and no airdrop. Supply is fixed at 500,000,000 with no new issuance, ever. Until solieum.com says where to find it, any address claiming to be the Solieum coin is a scam.

BUILD ON IT

Write once with Solve, run on Solieum

Solve is Solieum's language and framework. A contract written once in CradleScript compiles to a native Solana program, the exact artifact Solieum executes, and to Solidity, Move and WASM for other chains.

solvelang.com

Open Cradle Studio

MORE FROM THE BOOTH

AI CONTROL
Human authority over autonomous intelligence.

Solve · Cradle
Write a contract once, ship it to every major chain.

Solieum pitch deck
38 slides, or a 16-slide summary. Also as PDF.

AI CONTROL pitch deck
12 slides. Also as PDF.

Solve · Cradle pitch deck
12 slides. Also as PDF.

DIGITAL BROCHURE

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