THE LINUX FOUNDATION
OPEN SOURCE SUMMIT
KOREA

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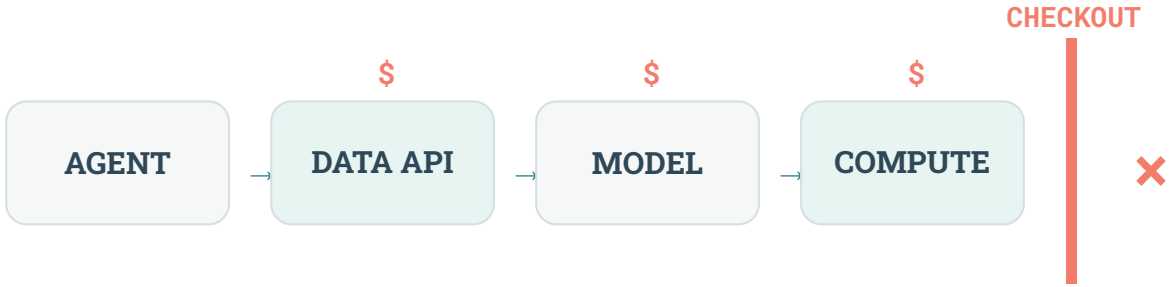
x402
Open Payments.
Open Governance.

Junhyeok Yoo, Researcher, Four Pillars

Agents can call any API. Paying still breaks the loop.



The execution loop stops at checkout.

ONE REQUEST → MANY PAID CALLS

The loop breaks where software meets checkout.

The web standardized data exchange, not value exchange.

DNS · TCP/IP · TLS · HTTP · SMTP

PAYMENTS → proprietary integrations

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PART 1 · WHY NOW

HTTP left 402 unfinished for three decades.

1992 proposed
1997 reserved
2016 21.co (too early)
2025 x402 ships (coinbase)
2026 neutral governance (linux fdn)

RFC 7231 · §6.5.2 · 1992

402 Payment Required

The 402 (Payment Required) status code is reserved for future use.

Why 21.CO Failed in 2016?

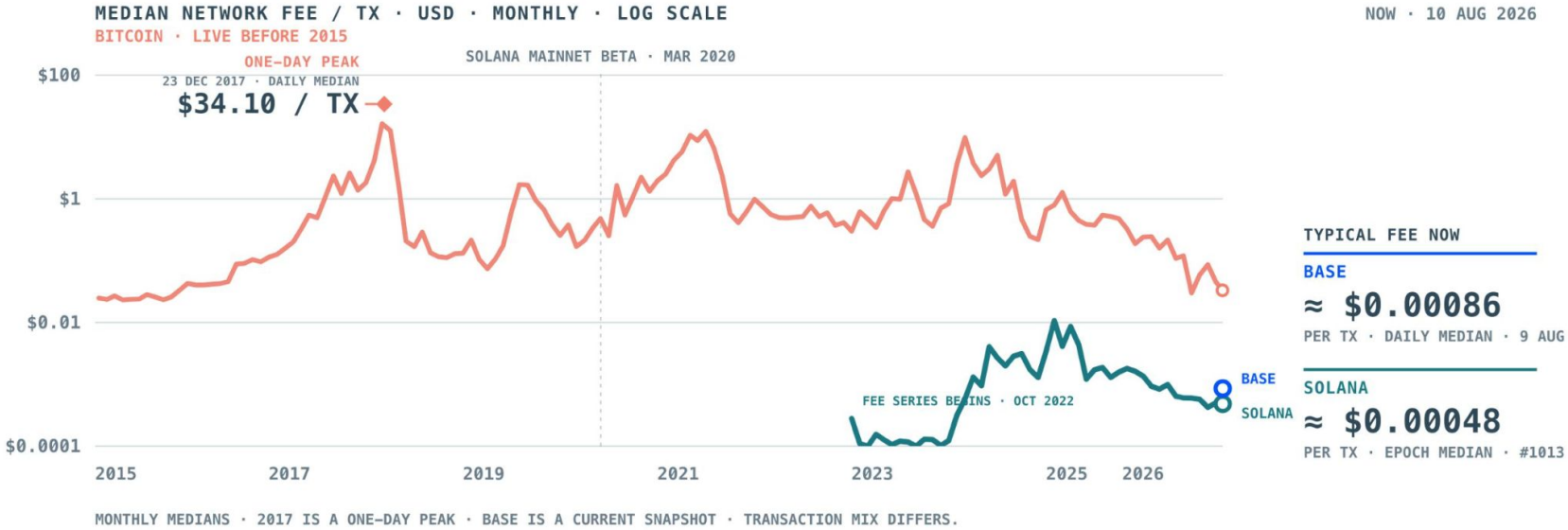
- High Tx Costs

Bitcoin fee spike

- Lack of Market

“Why pay BTC for API?

High Tx Costs ➔ Resolved via scalable L1/L2s



Lack of Market ➔ The new buyer is software itself.

T1

HUMAN CHECKOUT

Agent discovers; human completes payment.

T2

DELEGATED CART

Agent acts inside a merchant account.

T3

MACHINE PAYMENT

Agent negotiates and pays at request time.

NO HUMAN OPENS CHECKOUT.

x402 is the interface—not the money.

NOT A CHAIN. NOT A TOKEN. NOT A WALLET.

x402 standardizes one moment:

PAYMENT REQUIRED.

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PART 2 · HOW IT WORKS

A paid request is six bounded transitions.

The wire exchange is short.

HTTP carries terms + proofs

PAYMENT RAIL commits value

Implementation · Payment gating lives in middleware.

IMPLEMENTATION · GATE

SELLER / RESOURCE SERVER

Price the route.
Keep logic clean.

Middleware owns parsing, policy, and ordering.

SELLER · V2 API (SIMPLIFIED)

```
app.use(paymentMiddleware({
  "GET /weather": {
    accepts: [{
      scheme: "exact", price: "$0.001",
      network: "eip155:8453", payTo
    }]
  }
}, resourceServer));
```

Unpaid requests stop at the gate.

The server returns machine-readable terms.

STEP 02 · CHALLENGE

CLIENT ← SERVER

402 is an offer, not a charge.

PAYMENT-REQUIRED
Base64 JSON
with `accepts[]`

No funds move.

CLIENT · OFFICIAL V2 API

```
let response = await fetch(url);
if (response.status === 402) {
  const header = response.headers.get(
    "PAYMENT-REQUIRED"
  );
  const terms =
    decodePaymentRequiredHeader(header!);
}
```

402 advertises terms. It does not move money.

Select terms, sign, retry.

STEPS 03–04 · AUTHORIZE

CLIENT / WALLET

Sign bounded authority.

amount · asset · payTo
network · expiry · nonce

Private key stays
inside the wallet.

CLIENT + WALLET · OFFICIAL V2 API

```
const payload = await client
  .createPaymentPayload(terms);
const proof =
  encodePaymentSignatureHeader(payload);

response = await fetch(url, {
  headers: { "PAYMENT-SIGNATURE": proof }
});
```

Authorization is not settlement.

Verify before the handler runs.

STEPS 05–07 · VERIFY

SERVER → FACILITATOR

Verify intent before work.

signature · recipient
amount · validity window
nonce · scheme/network

Read-only.

SERVER FLOW · SIMPLIFIED

```
const result = await facilitator.verify(
  paymentPayload,
  paymentRequirements
);
if (!result.isValid) return reject(result);
return runProtectedHandler();
```

verify() is read-only; funds have not moved.

Settle, then return the resource.

STEPS 08–12 · COMMIT

SERVER → FACILITATOR

Settle after successful work.

Default authorization:
verify → handler
settle → respond

Other flows reorder this.

AUTHORIZATION FLOW · SIMPLIFIED

```
const resource = await runHandler();
const paid = await facilitator.settle(
  paymentPayload,
  paymentRequirements
);
if (!paid.success) return reject(paid);
setPaymentResponseHeader(paid);
return res.json(resource);
```

settle() commits value; the response reports outcome.

One grammar, many schemes and rails.

Negotiation selects an explicit (transport, scheme, network) combination.

TRANSPORT	`HTTP`	`MCP`	`A2A`	where messages travel
SCHEME	`exact`	`upto`	`batch`	what economic promise means
NETWORK	`EVM`	`Solana`	`Card`	where value settles

`chain-agnostic ≠ universally implemented`

Production puts policy around the same loop.

75.41M
transactions / 30d

$24.24M
volume / 30d

22K
sellers

01	AGENT POLICY	budget · expiry
02	402 GATE	terms · proof
03	FACILITATOR	verify · settle
04	PAYMENT RAIL	finality

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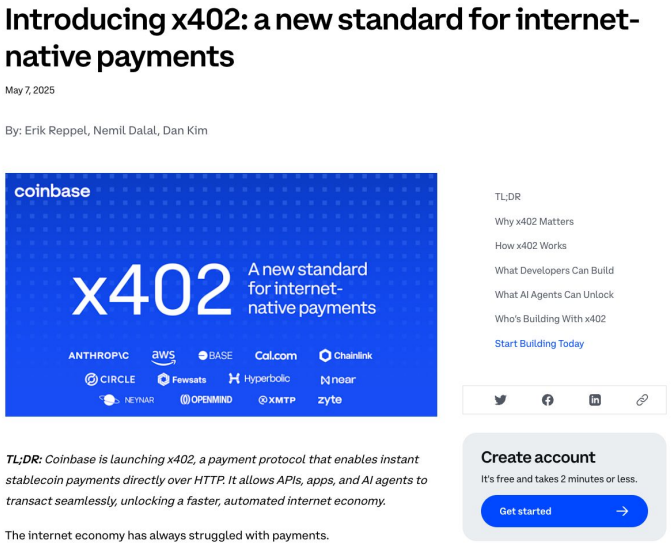
PART 3 · FROM CODE TO FOUNDATION

Adoption came before the governance move.



Introducing x402: a new standard for internet-native payments

May 7, 2025

By: Erik Reppel, Nemil Dalal, Dan Kim

coinbase

x402 A new standard for internet-native payments

ANTHROPIC aws BASE Cal.com Chainlink CIRCLE Fewsats Hyperbolic near NEYNAR OPENMIND XMTP zyte

TL;DR

Why x402 Matters

How x402 Works

What Developers Can Build

What AI Agents Can Unlock

Who's Building With x402

Start Building Today

Create account

It's free and takes 2 minutes or less.

Get started

TL;DR: *Coinbase is launching x402, a payment protocol that enables instant stablecoin payments directly over HTTP. It allows APIs, apps, and AI agents to transact seamlessly, unlocking a faster, automated internet economy.*

The internet economy has always struggled with payments.

MAY 2025 Open source

DEC 2025 V2 shaped in public

MAR 2026 Native support ships

APR 2026 Linux Foundation intent

JUL 2026 Operational launch

Different stacks still meet at x402.

Different stacks integrate instead of forking the boundary.

Membership breadth is the signal of adoption

APRIL 2026

23

initial supporters

→

JULY 2026

40

foundation members

Four working groups are already working on adoption.

Working Groups

Domain Discovery
Slack
Mailing List

Identity
Slack
Mailing List

Tax
Slack
Mailing List

Card Acceptance
Slack
Mailing List

The x402 ecosystem is already taking shape.

Premier Members

adyen
aws
American Express
CIRCLE
CLOUDFLARE
coinbase
fiserv.
Google
MONAD FOUNDATION
MoonPay
ripple
shopify
SOLANA FOUNDATION
Stellar
stripe
VISA

General Members

Aleo
ARKHAM
Cyclops
ETHGAS
Fireblocks
galaxia MONEYTREE
Hecto Financial
Injective
kakaopay
Kite
LayerZero.
LEDGER
MERIT
near
polygon
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t54
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World Liberty Financial
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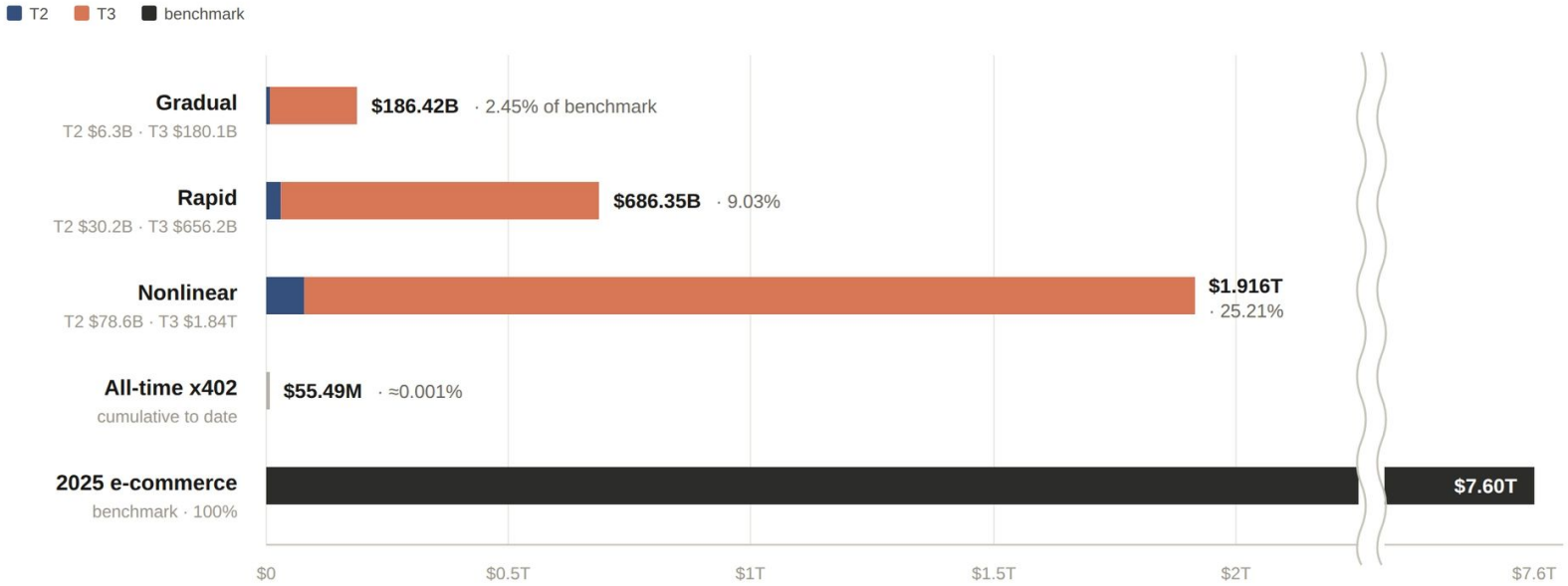
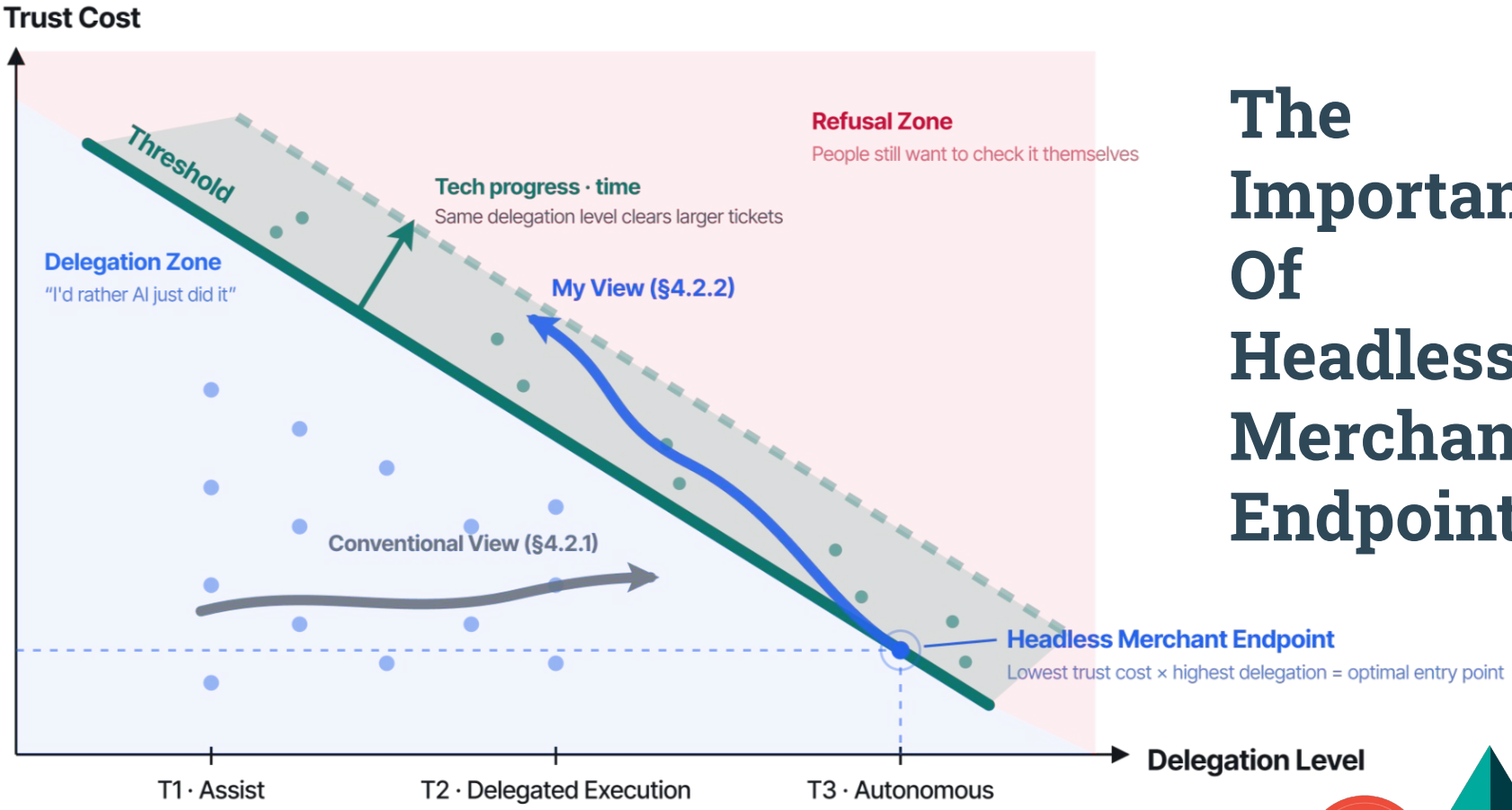
PART 4 · WHAT COMES NEXT

x402 Payment Volume Scenario



The Importance Of Headless Merchant Endpoint



x402 Value Capture Scenario

Value-capture layer	Gradual adoption	Rapid adoption	Nonlinear adoption	Output metric
Stablecoin issuers	$26.79M	$98.63M	$275.30M	Pre-expense reserve income based on net additional circulating balances
Blockchains	$8.66M	$31.56M	$88.37M	Network-fee benchmark using Base's average transaction fee
Facilitators	$189.84M	$692.14M	$1.938B	Gross managed-service revenue assuming a 50% processing share
Wallets	$37.28M	$205.91M	$766.32M	Potential ancillary-service revenue by scenario
Discovery	$55.93M	$205.91M	$574.74M	Potential revenue from supplier connection and order allocation

HTTP taught machines how to ask.
x402 gives them a way to pay.

Now make it boring,
safe, and interoperable.

Questions?

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