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Commons

# Introduction to the XRPL ecosystem

March 3rd, 2025

# Agenda

1. What To work On
2. Key Blockchain Concepts
3. The XRP Ledger
4. Tools & Resources

# XRPL Commons

Commons

Our mission is to create the conditions of success for entrepreneurs and developers to thrive in the XRPL ecosystem.

XRPL Commons



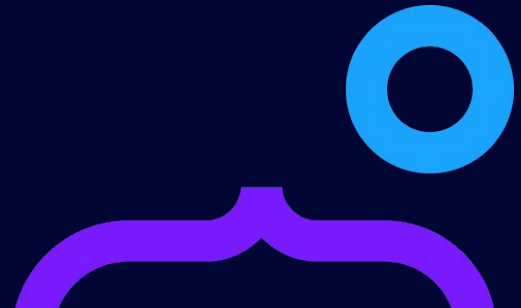
# We provide support to the XRPL community.

🎓 Learn

🛠️ Build

🛎️ Adopt

🎤 Engage



XRPL Commons



# Learn

The learning curve to Blockchain is steep. It's better to be supported whether you have tech or business roles.

## Academic partnerships

## Learning resources

## Trainings for students & instructors

## Research

XRPL Commons

# 🛠️ Build

Our in-house residency and hackathons offer builders a playground for invention.

## The Aquarium 🌊

## Hackathons

XRPL Commons



# Adopt

Blockchain integration for corporations and large institutions with tailored support and resources.

## Workshops & Summits

## Corporate Developers Trainings

## Corporate & Institutional Partnerships

XRPL Commons



# 🎤 Engage

Meetups, podcasts, our Community Magazine, and news on our socials unite the XRPL ecosystem.

## XRPL Meetups

## Podcasts

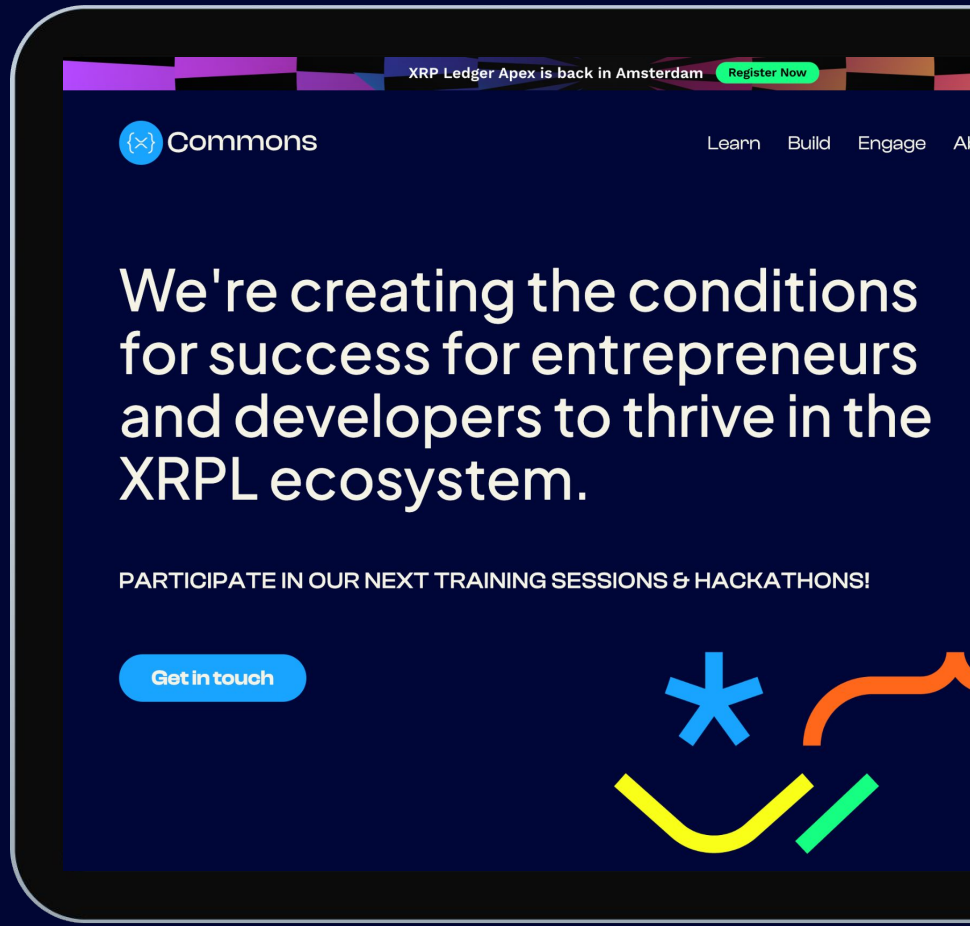
## Community Magazine

## News

XRPL Commons

# Find out more

https://xrpl-commons.org



# What To Build?

# 1. What to Build



## Agentic Frameworks

- AI-driven autonomous agents interoperating on XRPL
- AI-powered governance and decentralized decision-making tools
- Blockchain-based provenance tracking for AI-generated content and transactions
- Agentic organizations specializing in trading

# 1. What to Build



## Stablecoin & DeFi Tools for Businesses

- Cross-border payment tools using stablecoins on XRPL
- Solving for the counterparty trust problem
- DeFi applications (lending, staking, automated payments)
- Automation tools
- Interoperability solutions between different chains using stablecoins as an anchor

# 1. What to Build



## Crypto for Good

- Financial Inclusion: AI-driven credit scoring, micro-lending, and savings tools for the unbanked.
- Climate Resilience: Blockchain-powered climate data tracking, carbon credits, and decentralized energy solutions.
- Humanitarian Aid: Transparent, crypto-native fundraising and aid distribution systems.

# L1 On chain transaction

# Blockchain Key Concepts

# What is a blockchain?

# A shared database...

An

**Immutable, Distributed,** and **Decentralized**

**Database**

that **coordinates Diverse Actors.**

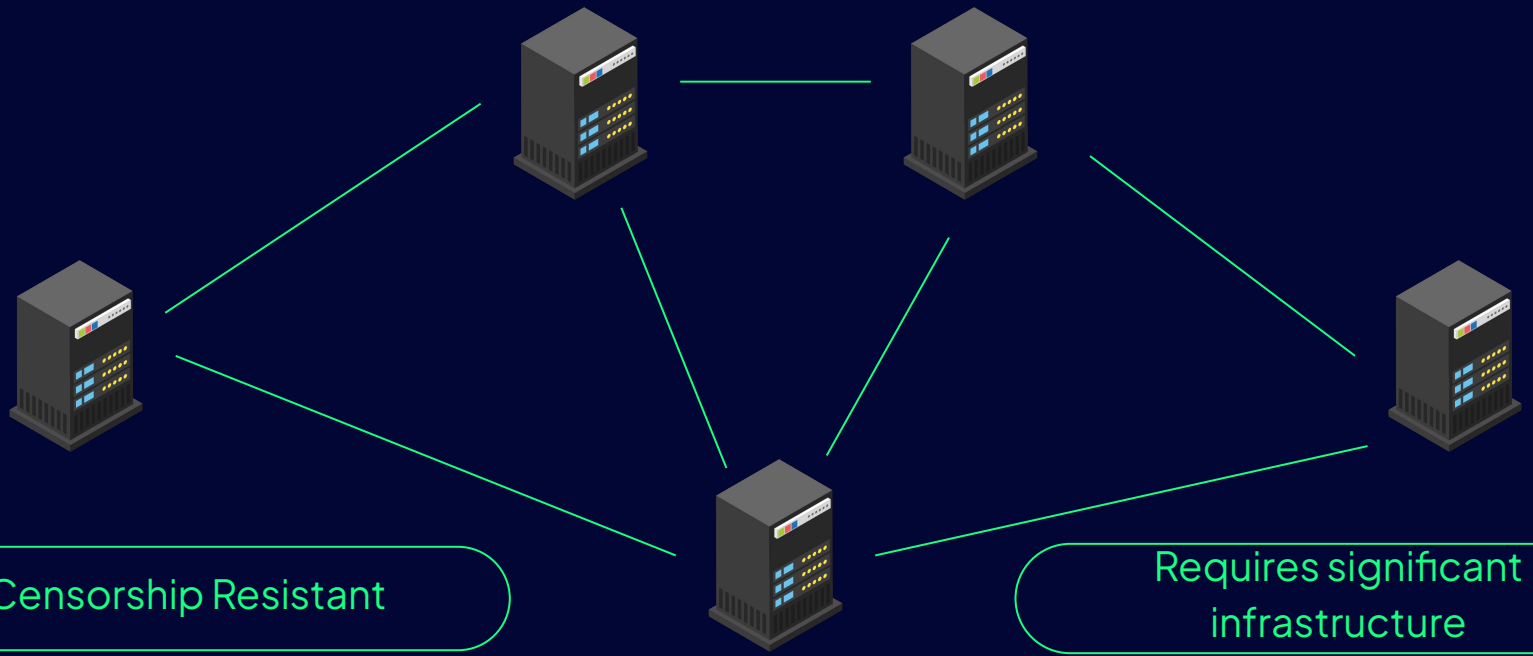
# An immutable data store

The ledger is immutable

**Write Once** — **Read Forever**

Data is tamper-proof

# Distributed



Censorship Resistant

Requires significant infrastructure

# Decentralized

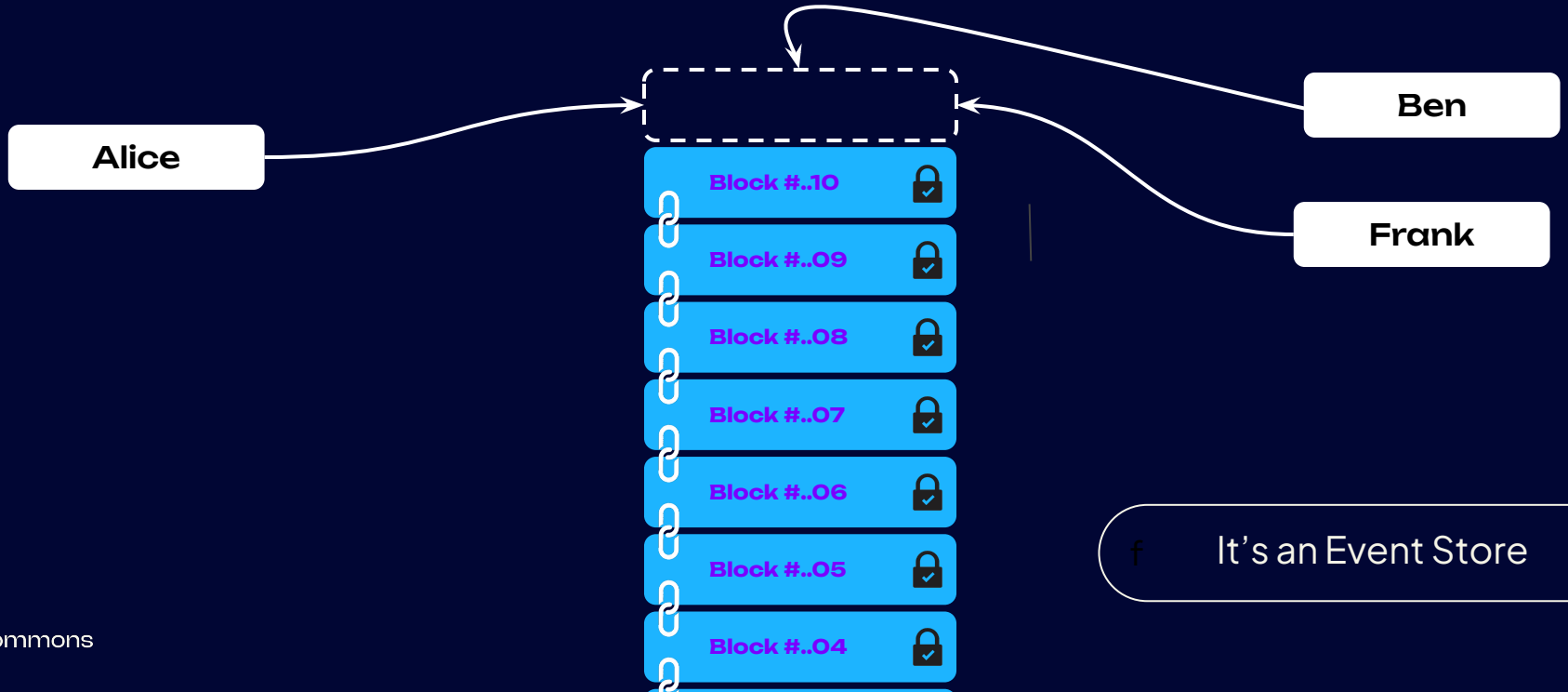
Users agree **beforehand** on the rules used to establish the truth via **the consensus mechanism.**

## Types of consensus mechanisms

- Proof of Work (PoW)
- Proof of Stake (PoS)
- Delegated Proof of Stake (DPoS)
- Proof of Importance (PoI)
- Proof of Capacity (PoC)
- The Proof of Elapsed Time (PoET)
- Hybrid Proof of Activity (PoA)
- Proof of Authority (PoA)
- **Proof of Association (PoA)**

# A database

Data is written sequentially



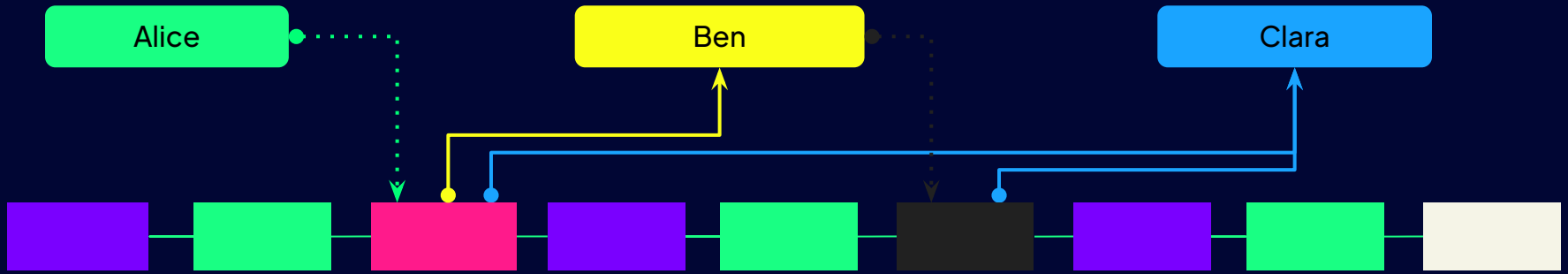

It's an Event Store

# Coordinating Diverse Actors

Different profiles, outside your circle of trust or outside your control

- Clients
- Competitors
- Suppliers
- Etc...

- Everyone is one hop away to read or write to the blockchain making it easy for all to sync
- Coordination happens in the open



# 1. Definition



An

**Immutable, Distributed**

**Decentralized**

**Database**

**Coordinating**

**Diverse Actors**

Idddcda

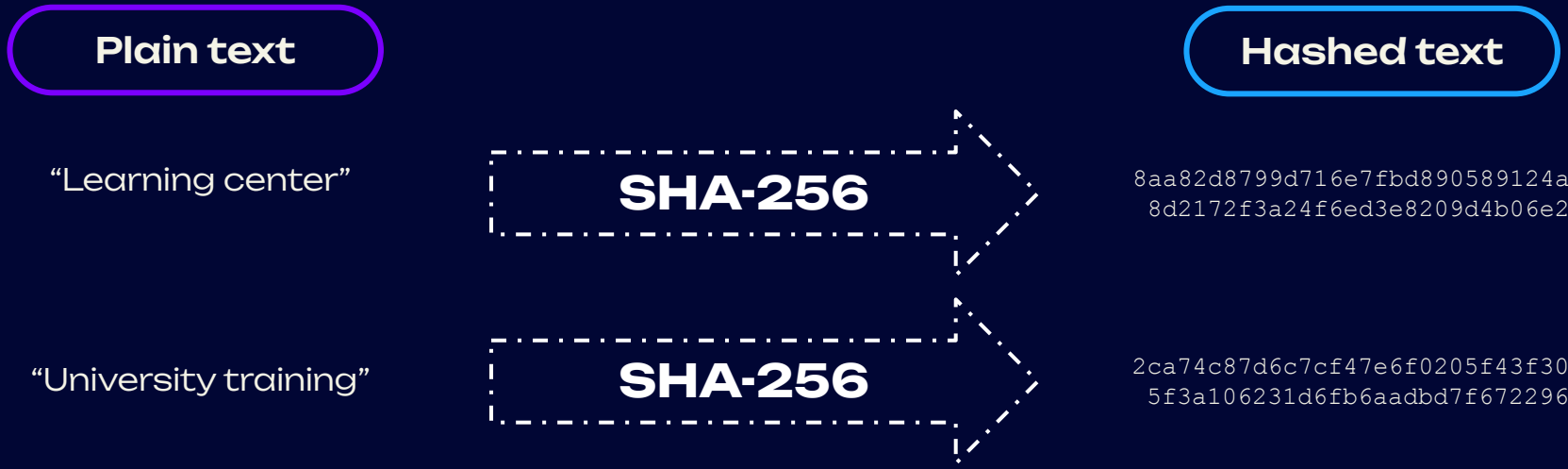

Invitation only

Companies and consortiums


Anyone can join

Public services, governance, audits, proof of authenticity

# A hash is a function that gives a unique fixed size output for any input

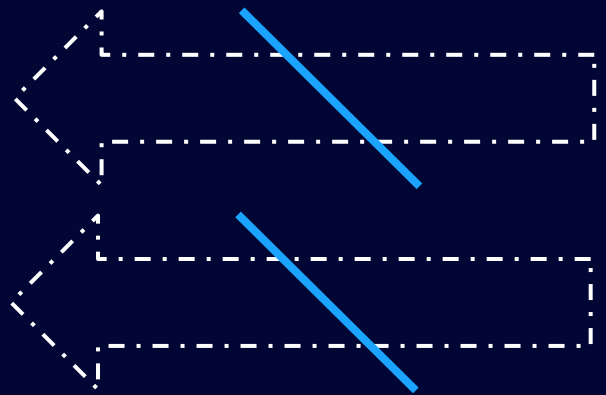


# Hashing is deterministic and only one-way

**Plain text**

**Hashed text**

“Learning center”

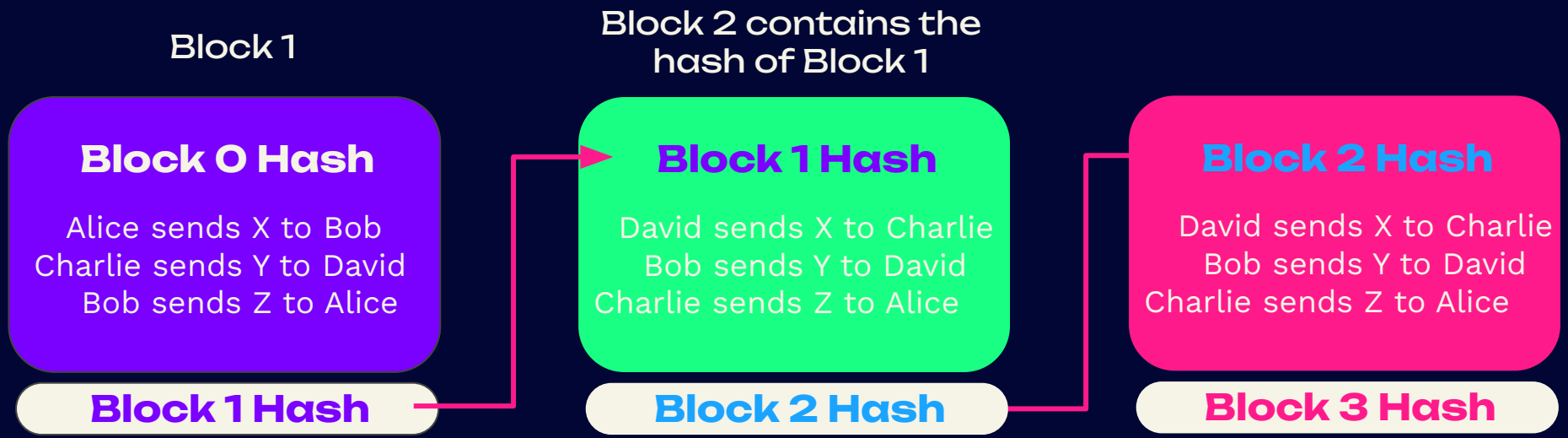


8aa82d8799d716e7fbd890589124aeef6
8d2172f3a24f6ed3e8209d4b06e2c15

“University training”

2ca74c87d6c7cf47e6f0205f43f302d59
5f3a106231d6fb6aadbd7f672296419

# Blocks are ledgers that contain information from the previous block



# The chain of blocks is called a blockchain

# How to write on the blockchain

Public Key Cryptography (PKC) leverages public keys & private keys which are the cornerstones of the digital identity and the proof system

Public key (the address)

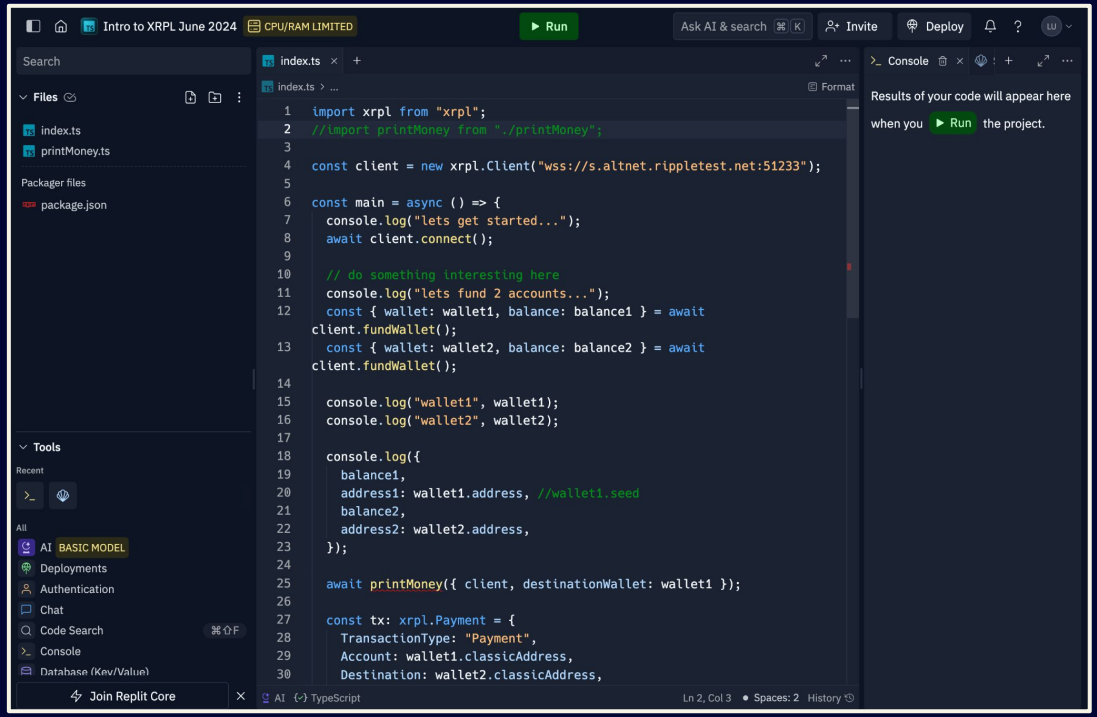
Used to encrypt information destined to the holder & to verify signatures

Private key (the password)

Used to decrypt messages encoded with the public key and to signs transactions

Digital signatures are unique to each transaction and are proofs of who created them

# replit.com



# The XRP Ledger

# A brief history of blockchain

**1991- 2000**
Publication of work on cryptography & Merkle trees

**2004**
Hal Finney introduces a digital currency system to solve the double spending problem

**2008-2009**
Satoshi Nakamoto publishes a whitepaper on Distributed Blockchain. The first bitcoin block is mined by Satoshi

**2012**
Creation of the XRP Ledger

**2014-2016**
Vitalik Buterin creates the Ethereum network


**2017 - 2021**
Acceleration of DeFi, NFTs and Metaverse

**2024-onwards**
Bull market, Bitcoin and other cryptos reach all time high

# Bitcoin

## 2008–2009

The beginning of an ideology

The Satoshi sculpture in Budapest

# Bitcoin's limitations



Topic: Bitcoin without mining (Read 13555 times)

**Bitcoin without mining**
May 27, 2011, 03:44:53 PM

#1

So I've been thinking...
mining seems like such an unfortunate side effect of the system since it is so wasteful. It will be a bit obscene how much will be spent mining if the network ever gets large. It would be cool to come up with a bitcoin that doesn't need miners.

There are several issues but I'll ignore how coins are distributed and focus on the central problem of creating some way to trust the central ledger*. Currently this is what mining solves. The network trusts the ledger with the most mining done on it. So now to trust bitcoin you have to trust that >50% of the current mining power is "good". And actually the way the network has evolved with pools we are actually trusting that every large pool operator is "good" since even if the pool isn't over 50% the operator could have non-pool mining going on bringing the total over 50% or two pools could collude to defraud the network etc. Also if say some government decides to wreck the network it wouldn't be that expensive for them to do so. (This is all discussed in other threads so no need to go into this here) My point is that although the current network uses mining as a way to solve the trust issue it really doesn't since you still must trust the large pool operators.

My idea is to make this issue of trust explicit.

Let's say a **node** has a public key that the client generates for them. There is no connection between this key and a wallet key. It just allows you to be sure you are talking to the node you think you are.

So when you run a node you choose which other nodes you trust. So you could say "I trust my 3 friends' nodes, Gavin's node, and these 5 businesses' nodes." This trust just means that you believe these people will never participate in a double spend attack or otherwise manipulate the ledger.
The ledger would basically be like the current bitcoin block chain but it would also have a list of what nodes believe the current ledger to be valid. <hash of current ledger signed by node's public key> (This list doesn't have to be complete. Nodes can just collect this list as needed. They could even just ask the nodes they trust if they think the current ledger is valid since those are the only ones they care about)

Transactions are still sent to all nodes connected to the network. There would be a network wide timestamp. Transactions would only be accepted if they were within a certain time period of the network timestamp. So you would need to wait maybe 10min before you could fully trust a given transaction. After this waiting period you could be sure those coins weren't double spent.

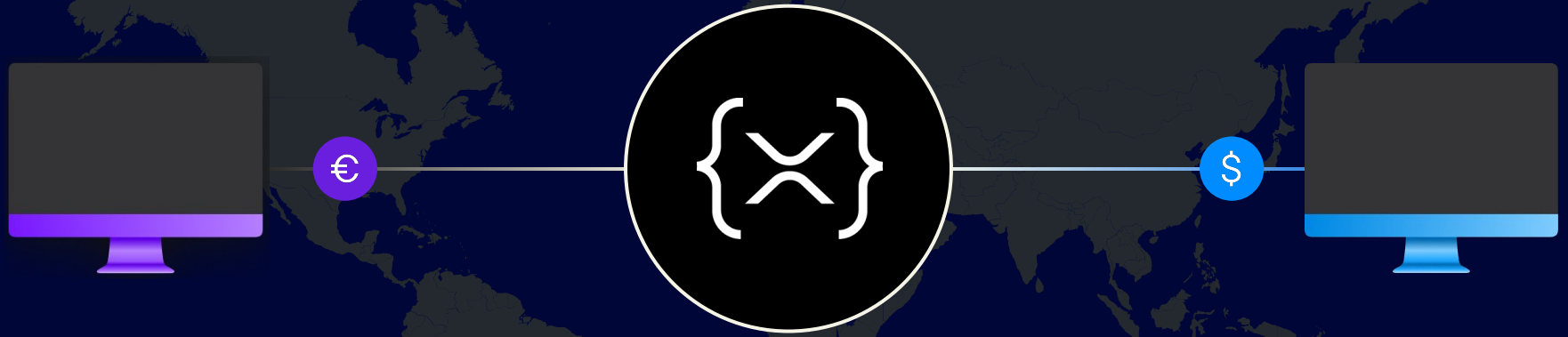
If a node ever encounters two conflicting ledgers it would just go with the one that was validated by more nodes that it trusts.

So there should always be a consensus among the trusted members of the network.

There would be a way to look up particular nodes in the network and ask them questions. (I'm imagining this whole thing running on Kademlia, a DHT)

Source: https://bitcointalk.org/index.php?topic=10193.0

# XRP Ledger (XRPL) launched in 2012 to address limitations of crypto and fiat currencies for financial use cases, specifically payments



# XRPL has matured into one of the most robust layer-1 blockchains

**100%**
decentralized blockchain with 600+ nodes processing transactions and maintaining the ledger

**1,750+**
unique apps and exchanges on mainnet built by a diverse set of global developers

**6M+**
active XRP wallet holders around the world

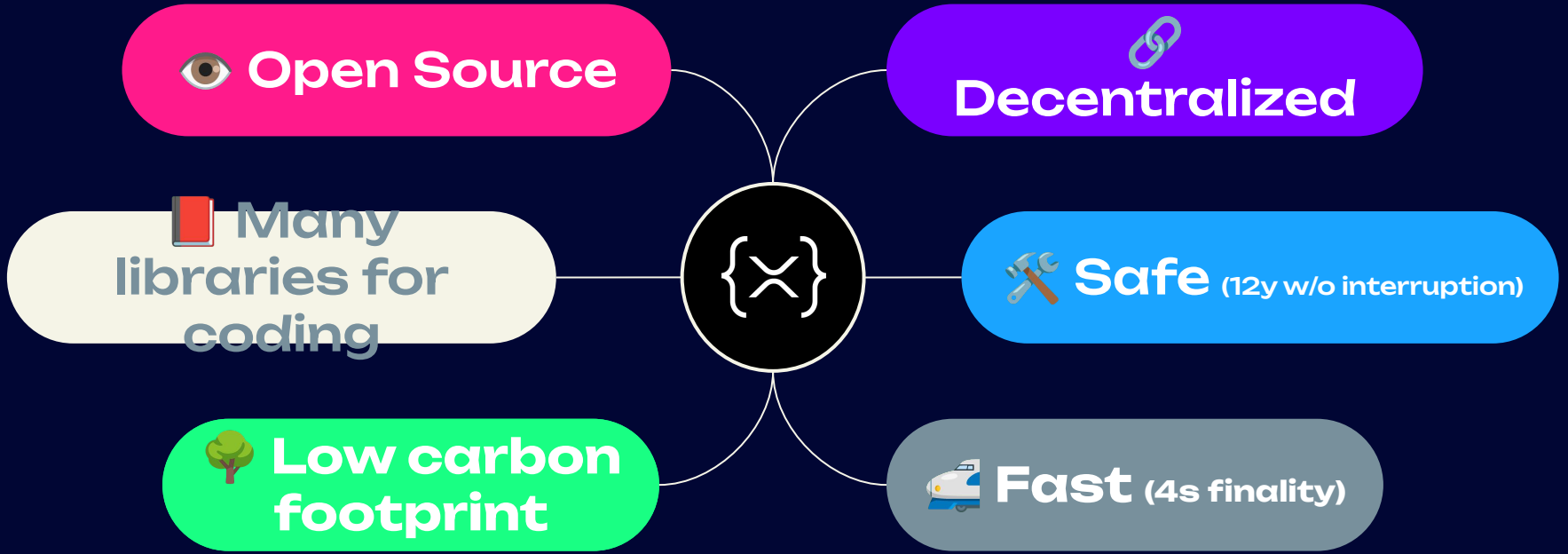
**125+**
Proof-of-Association validators operated by universities, exchanges, businesses, & individuals

**2.8B+**
transactions processed representing over $1T in value moved between counterparties

**~$130B+**
market capitalization of XRP, making it the ~8th largest cryptocurrency

Source: CoinMarketCap, April 2024 https://livenet.xrpl.org/

# The XRP Ledger



# Carefully designed to enable scalable blockchain development

## Proven

Supports large scale use cases and long term projects with **2.6B+ successful transactions, more than Ethereum,** without failure or security breach since 2012

## Batteries included

Access complete blockchain functionality, from tokenizing assets to advanced payments, **without needing to learn, build, and maintain** complex smart contracts

## Fast, Cheap, Green

Low carbon blockchain settling transactions every **3–5 seconds** at fractions of a cent per transaction for mass market adoption

Source: https://blockchair.com/ethereum/charts/total-transaction-count

# XRPL Consensus

The XRPL consensus is a type of **Proof of Association**

**Explicit trust**
Hundreds of validator nodes participate in the consensus. **35 special nodes** are on the UNL which lists the nodes who have final say. 80% of the UNL must agree to validate a block.

**Decentralized**
No single entity can control more than 5% of the UNL. Every member of the UNL is a known entity with full transparency.

**Independently governed**
The XRPL foundation ensures UNL members adhere to strict guidelines of maintenance upgrades and uptime. UNL members are regularly audited and can change over time.

# The protocol native DEX

## a key feature that powers trading and settlement of tokenized assets without intermediaries

### Protocol Features

**On-Chain:** CLOB based trading system with unlimited pairs, minimal fees, and fast speeds fully on-chain, unique to XRPL vs EVM chains

**Liquidity Aggregation:** Liquidity is consolidated in a single DEX, leading to the best prices, deeper liquidity, and ease of use

**No Miner Extractable Value (MEV):** There are no miners to prioritize only certain transactions (namely higher gas fee orders) to the ledger

**No Front-Running:** Transaction ordering is determined by distributed validators, making it near impossible to front-run transactions

### Technological Differentiators

**Auto-bridging:** XRP is used as an intermediary asset to complete trades at the lowest cost for two tokens with limited liquidity

**Pathfinding:** Transactions hop from one currency to another, piecing together the best path and liquidity between the original trading pairs

**AMM:** Expanding liquidity through a native AMM to determine whether swapping within a liquidity pool or order book provides the best price to execute

# Powerful protocol features provide the building blocks to innovate

### Native DEX

First on-chain DEX in the world, trading and moving tokens anywhere in seconds with competitive liquidity

### Issued Assets

Ability to represent digital currencies, legal obligations, fungible tokens, and other asset classes on the ledger

### Non-Fungible Tokens

Implements non-fungible tokens with built-in royalties where all trades handled by the DEX

### Token Asset Controls

Controls for token issuers and holders to enhance security and regulatory compliance

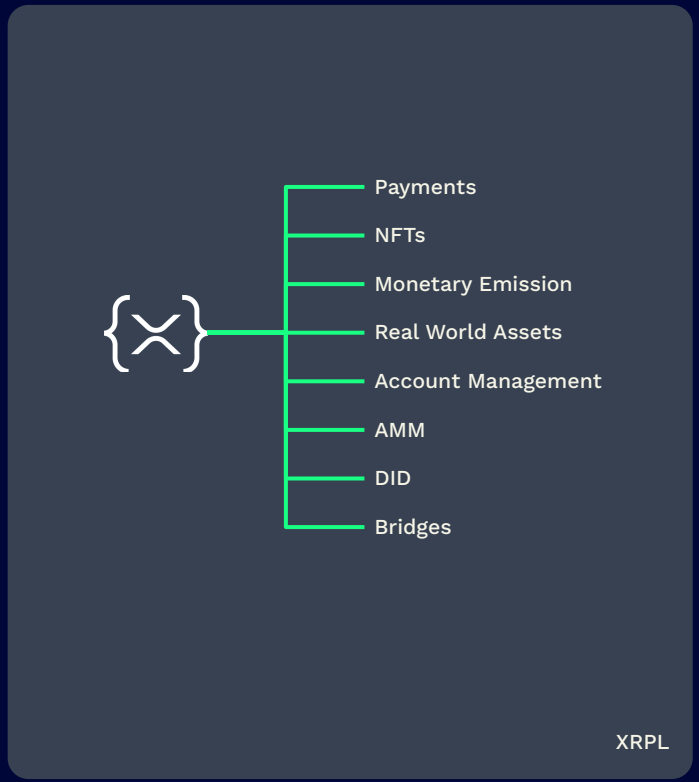
### Advanced Payments

Use advanced payment capabilities like “Escrow” and “Checks” to build smart applications without smart contracts

### Automated Market Maker

Liquidity pools bring yielding assets to the ledger as well as the ability to provide liquidity on your tokens

# One Endpoint to do all the things




**Single API**

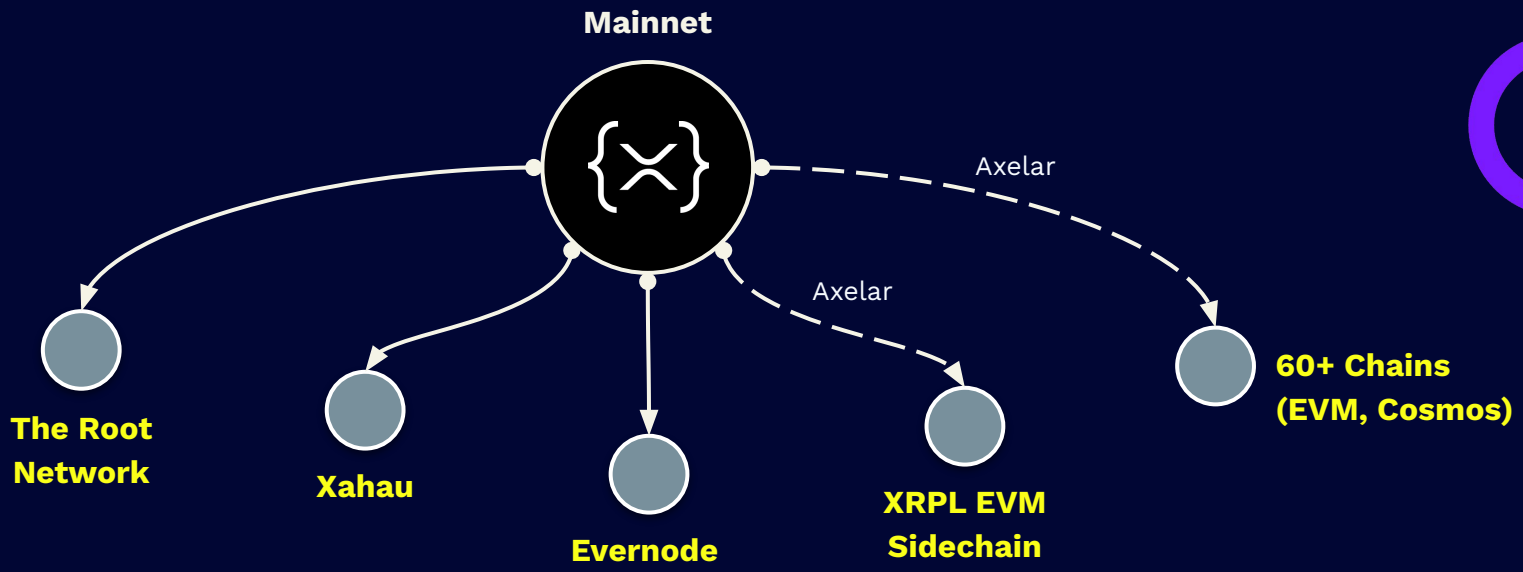
No need to stitch together disparate systems or spend months integrating complex technology - simply connect into XRPL through a single API

**Minimal Code Required**

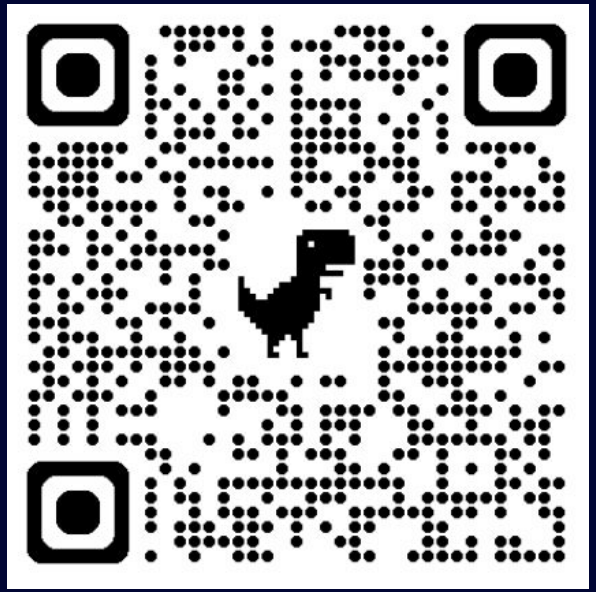
Astonishingly simple, you can get up and running on the XRP Ledger in as little as few lines of code using familiar programming languages (JS, Python, Java, and many more)

# The XRPL Extended Ecosystem

XRPL Mainnet interoperates with sidechains, to bridge XRP and tokens



# Activity



https://github.com/XRPL-Commons/2025-PBW-Online-Hackathon


XRP LEDGER