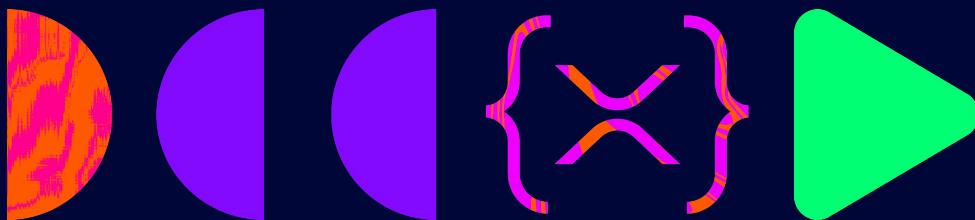


Introduction to the XRPL ecosystem



May 5th, 2025

You are holding open source content.

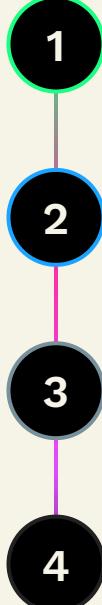
Here's how to handle it:

- You can use this content in your work, adapt it and share it.
- You must mention [XRPL Commons](#) as a source as well as the Creative Commons licence.



Creative Commons Attribution-ShareAlike CC BY-SA – This licence allows you to protect, reuse and adapt this content even for commercial purposes, if you mention XRPL Commons as a source and allow your re-adapted content to be under the same Open Source Licence.

Agenda

- 
- 1 Welcome to XRPL Commons
 - 2 Key Blockchain Concepts
 - 3 The XRP Ledger
 - 4 Tools & Resources



XRPL Commons



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

We provide support to the XRPL community.



Learn



Build



Adopt



Engage



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



Build

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

The Aquarium



Hackathons



Adopt

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

Workshops & Summits

Corporate Developers Trainings

Corporate & Institutional Partnerships



Engage

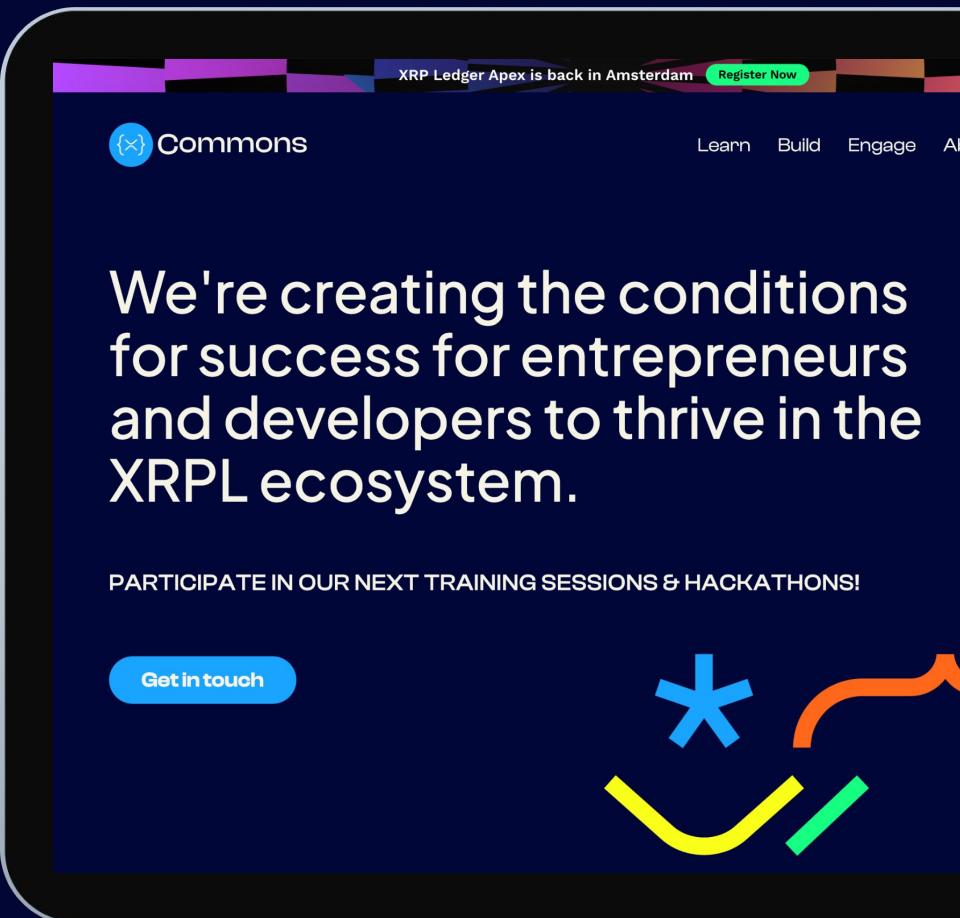
Meetups, podcasts, our Community Magazine, and news on our socials unite the XRPL ecosystem.

XRPL Meetups
Podcasts
Community Magazine
News

Find out more



🔗 <https://xrpl-commons.org>



The image shows a dark blue mobile phone screen displaying the XRPL Commons website. At the top, there's a purple header bar with the text "XRP Ledger Apex is back in Amsterdam" and a green "Register Now" button. Below the header is the XRPL Commons logo (a blue circle with a white 'x' and brackets) followed by the word "Commons". To the right are three buttons labeled "Learn", "Build", and "Engage". The main content area features a large white text block: "We're creating the conditions for success for entrepreneurs and developers to thrive in the XRPL ecosystem." Below this, in smaller white text, is "PARTICIPATE IN OUR NEXT TRAINING SESSIONS & HACKATHONS!". At the bottom left is a blue button with the white text "Get in touch". The bottom right corner of the screen features a stylized graphic of four curved lines in blue, orange, yellow, and green.

XRP Ledger Apex is back in Amsterdam [Register Now](#)

Commons

Learn Build Engage

We're creating the conditions for success for entrepreneurs and developers to thrive in the XRPL ecosystem.

PARTICIPATE IN OUR NEXT TRAINING SESSIONS & HACKATHONS!

Get in touch

Meet the XRPL Commons Team

Pillars



+1 Intern



Mathilde Morineaux
Education Director



Vera Radeva
Program Manager



Luc Bocahut
Product Director



Thomas Husnenet
Technical Partner

+1 Intern



Darius Tumas
Infra. Engineer



Florian Alonso
Project & Solutions Mgr



Launch



Aurelien Burget
Residency Director



Cyrille Bourdeaux
Program Manager



Odelia Torteman
Adoption Director

Business Enablers



Zsofi Borsi
Head of Com.
Engagement



David Bchiri
CEO



Melanie Damour
Strat. Initiatives
Director



Cassie Hirsh
Content Director



Alex Mavigok
Graphic Designer

July 17
Events



Elisa Bailly
Sr Events Manager



Fanny Brakchi
Experience Manager



**Who are you?
Tell us about yourself**

Blockchain Key Concepts

What is a blockchain?

1. Definition



A shared database...



1. Definition



An

Immutable, Distributed, and Decentralized
Database
that **coordinates Diverse Actors.**



An immutable data store

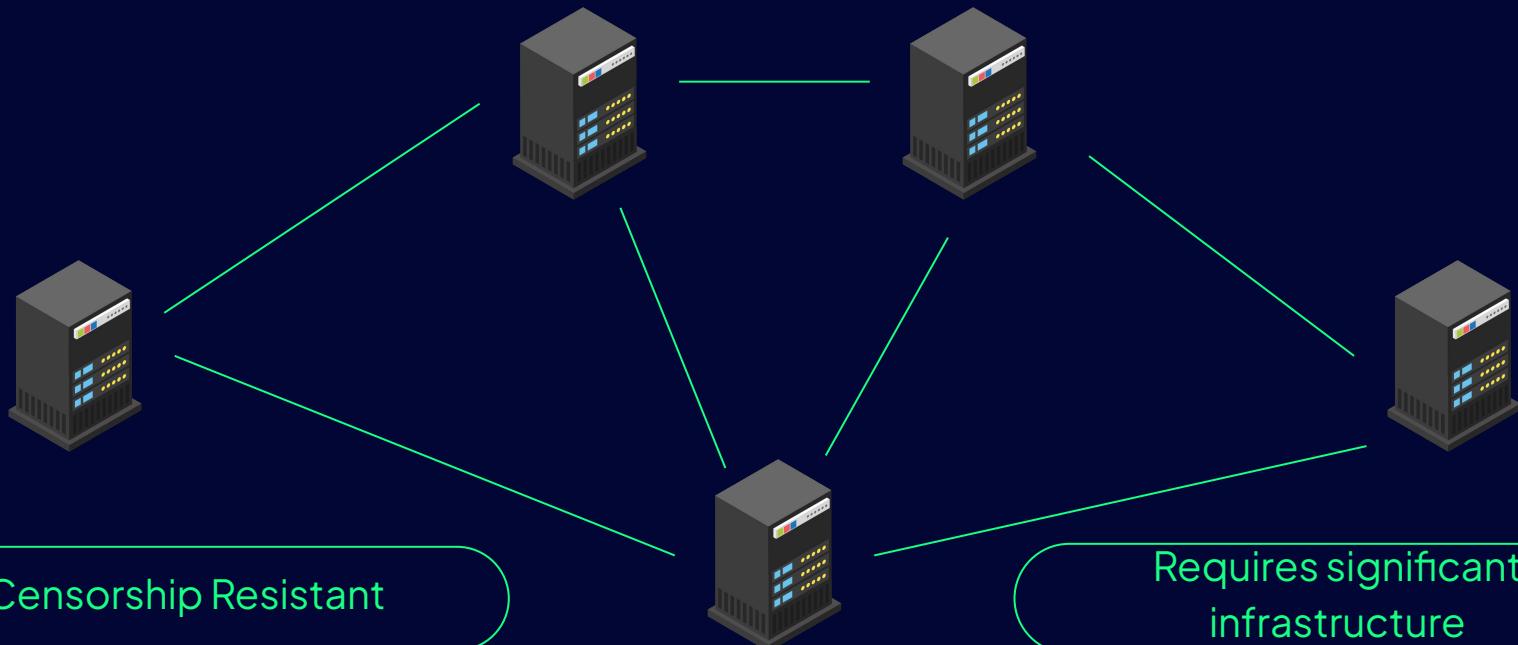
The ledger is immutable

Write Once

Read Forever

Data is tamper-proof

Distributed



1. Definition



Decentralized

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

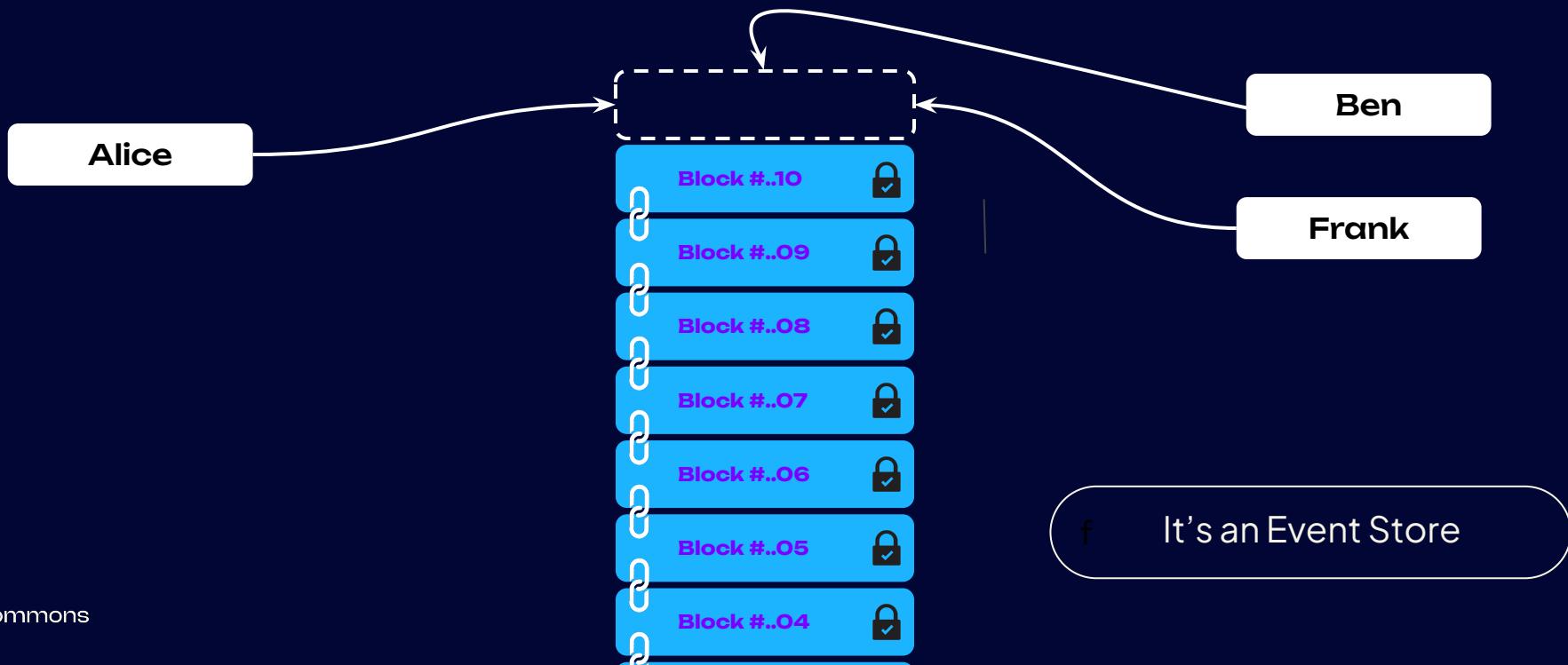


Types of consensus mechanisms

- 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

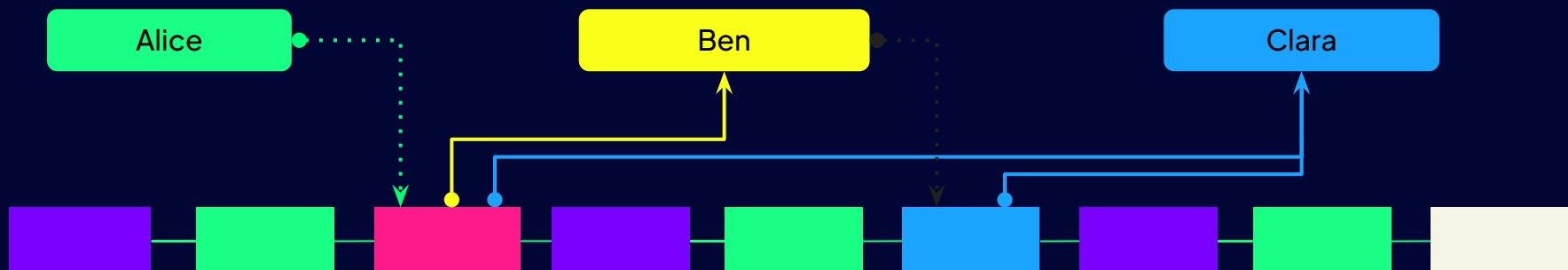
Data is written sequentially



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



An
**Immutable, Distributed
Decentralized
Database
Coordinating
Diverse Actors**

Idddcdca

1.

Definition



Private

Invitation only

Companies and consortiums

Public

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

Plain text

“Learning center”

Hashed text

8aa82d8799d716e7fb890589124aeef6
8d2172f3a24f6ed3e8209d4b06e2c15

“University training”

2ca74c87d6c7cf47e6f0205f43f302d59
5f3a106231d6fb6aadbd7f672296419

SHA-256

SHA-256

Hashing is deterministic and only one-way

Plain text

“Learning center”

“University training”



Hashed text

8aa82d8799d716e7fdb890589124aeef6
8d2172f3a24f6ed3e8209d4b06e2c15

2ca74c87d6c7cf47e6f0205f43f302d59
5f3a106231d6fb6aadbd7f672296419

2. A ledger in action



Blocks are ledgers that contain information from the previous block

Block 1

Block 0 Hash

Alice sends X to Bob
Charlie sends Y to David
Bob sends Z to Alice

Block 1 Hash

Block 2 contains the hash of Block 1

Block 1 Hash

David sends X to Charlie
Bob sends Y to David
Charlie sends Z to Alice

Block 2 Hash

Block 2 Hash

David sends X to Charlie
Bob sends Y to David
Charlie sends Z to Alice

Block 3 Hash

2. A ledger in action



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

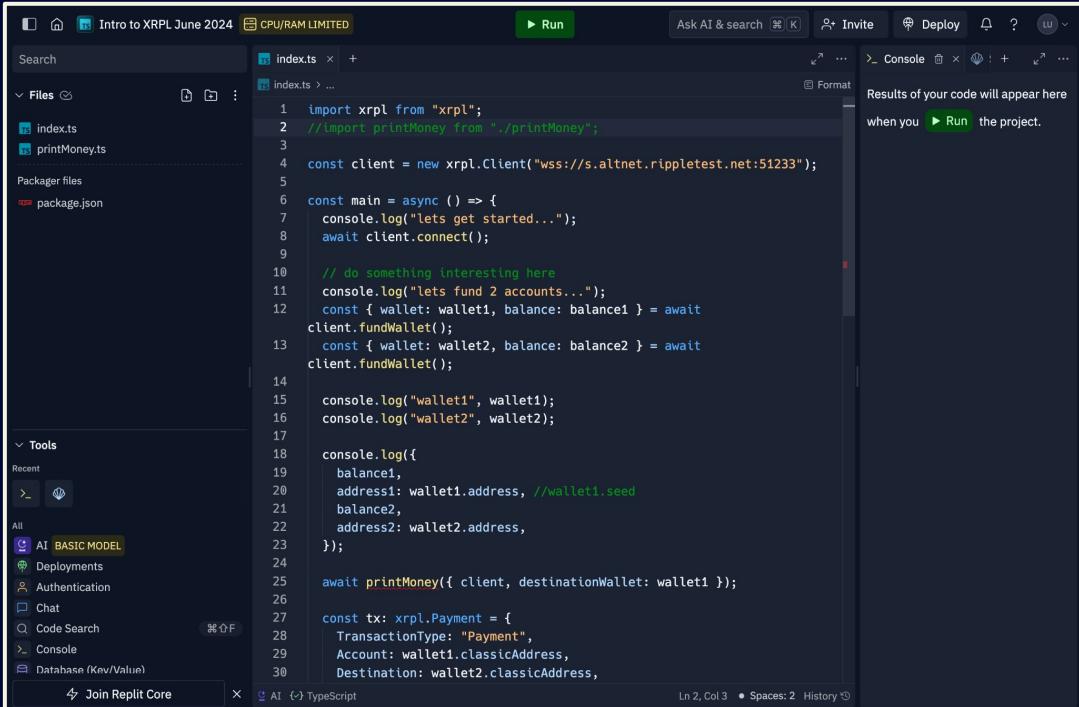
Digital signatures are unique to each transaction and are proofs of who created them

Quiz Time



<https://forms.gle/tq4Lk4dekCGKoqc37>

replit.com



The screenshot shows the Replit IDE interface. The main area is a code editor with the following TypeScript code:

```
import xrpl from "xrpl";
//import printMoney from "./printMoney";

const client = new xrpl.Client("wss://s.altnet.rippletest.net:51233");

const main = async () => {
    console.log("lets get started...");
    await client.connect();

    // do something interesting here
    console.log("lets fund 2 accounts...");
    const { wallet: wallet1, balance: balance1 } = await client.fundWallet();
    const { wallet: wallet2, balance: balance2 } = await client.fundWallet();

    console.log("wallet1", wallet1);
    console.log("wallet2", wallet2);

    console.log({
        balance1,
        address1: wallet1.address, //wallet1.seed
        balance2,
        address2: wallet2.address,
    });

    await printMoney({ client, destinationWallet: wallet1 });

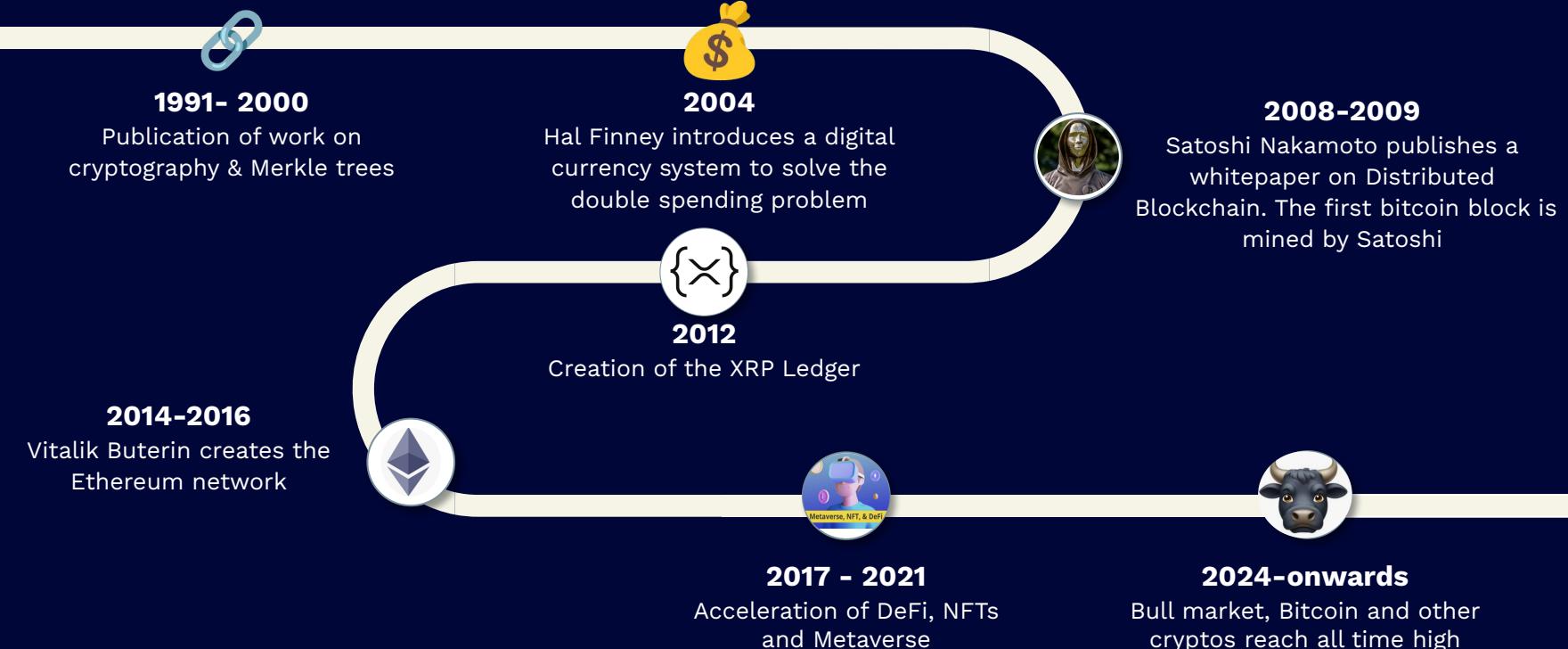
    const tx: xrpl.Payment = {
        TransactionType: "Payment",
        Account: wallet1.classicAddress,
        Destination: wallet2.classicAddress,
    }
}
```

The interface includes a sidebar with a 'Files' section containing `index.ts` and `printMoney.ts`, and a 'Tools' section with various options like AI, Deployments, Authentication, Chat, Code Search, Console, and Database (Key/Value). The status bar at the bottom indicates 'Ln 2, Col 3 • Spaces: 2 History'.

The XRP Ledger

3. The XRP Ledger

A brief history of blockchain



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.

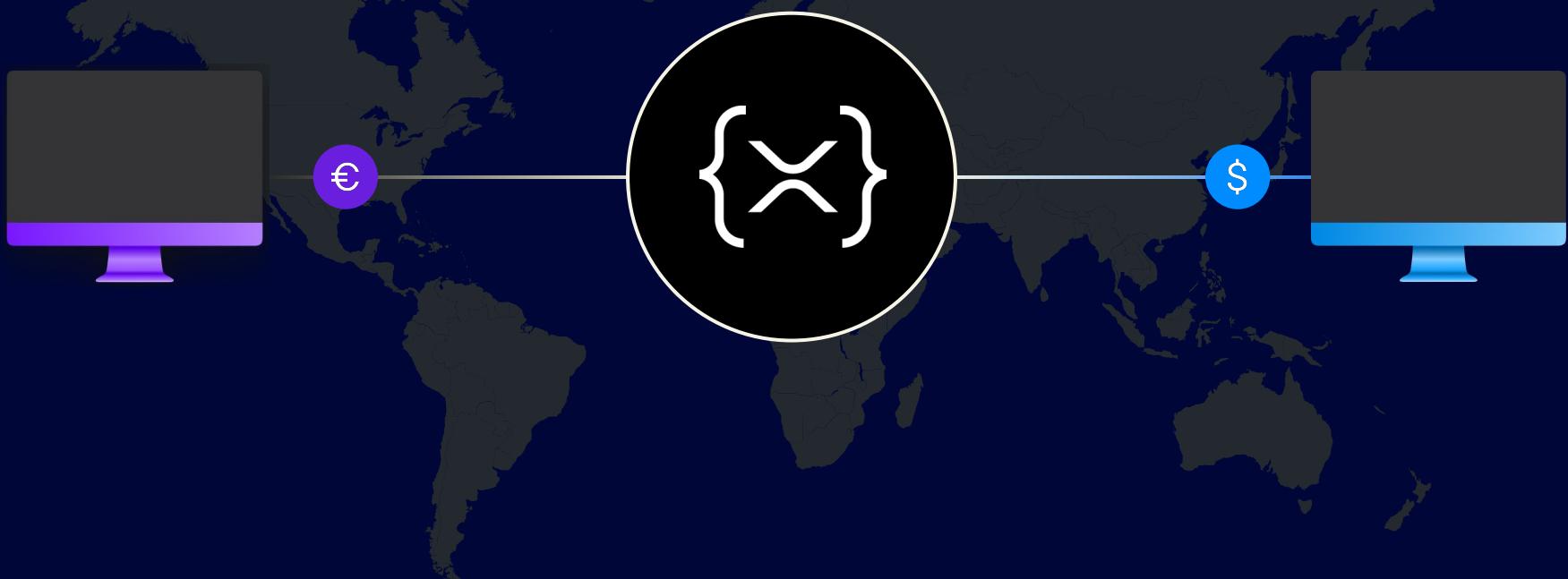
There would be a way to look up particular nodes in the network and ask them questions. (I'm imagining this whole thing running on Kademlia, a DHT)

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

3. The XRP Ledger



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



The XRP Ledger



Open Source



**Many
libraries for
coding**



**Low carbon
footprint**



Decentralized



Safe (12y w/o interruption)



Fast (4s finality)

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>

3. The XRP Ledger



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

5M+

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

~\$180B+

market capitalization of XRP, making it the ~8th largest cryptocurrency

The differences between the XRP Ledger, XRP, and Ripple



Layer-1 blockchain

The XRP Ledger is a decentralized public blockchain that is open-source and powered by a global developer community.

Companies, institutions, developers and individuals around the world use the XRP Ledger for use cases across, tokenization, payments, stablecoins, CBDCs, and more.



Native Digital Asset

XRP is the native digital asset (token) of XRPL, similar to ETH for Ethereum or SOL for Solana.

The primary utility of XRP is to facilitate transactions on the network.

XRP also serves to protect the ledger from spam, and to bridge currencies in the XRP Ledger's DEX.

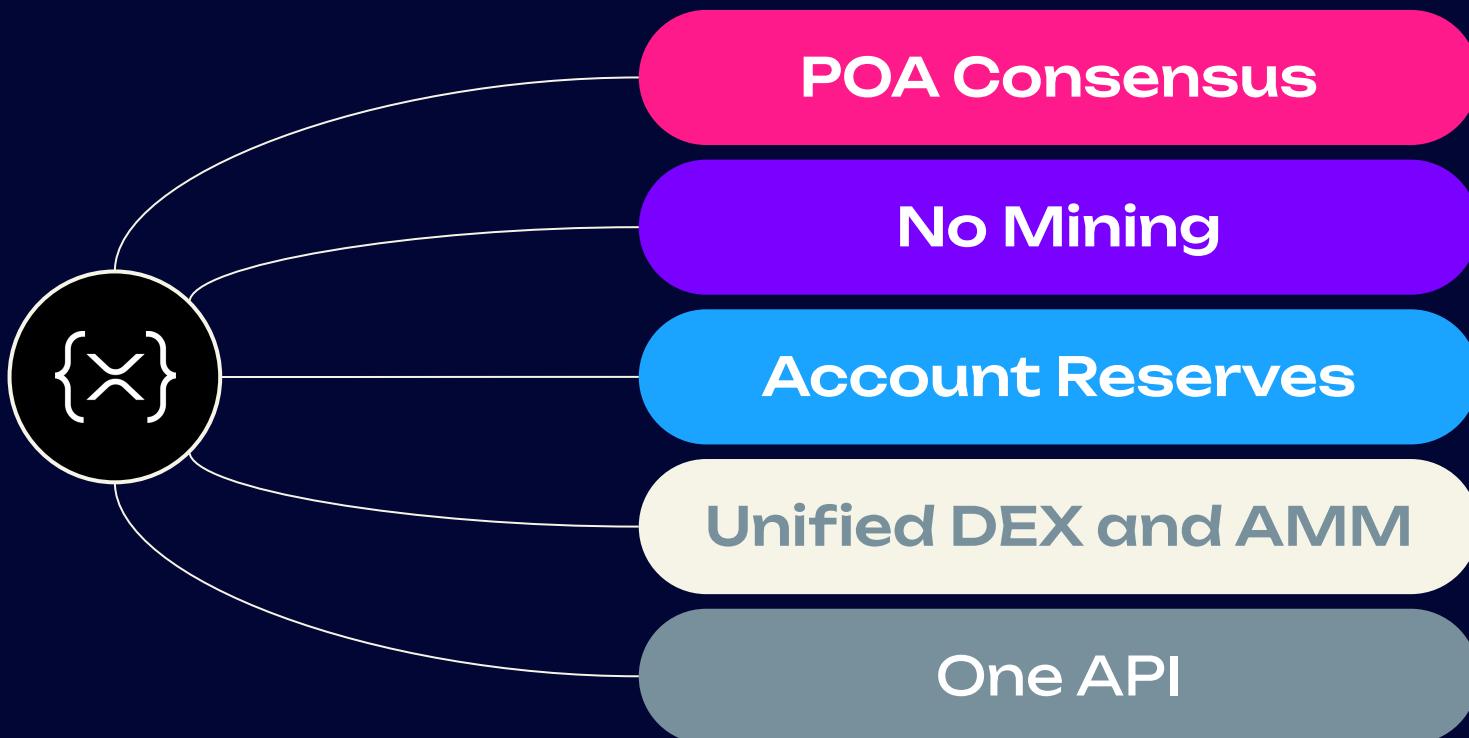


Crypto Solutions Company

Ripple is a technology company that builds crypto solutions for businesses. Ripple uses XRP as a bridge currency in its solutions because it's fast, efficient, and reliable, making it ideal for financial use cases like payments. Ripple is also a holder of XRP.

Ripple is one of many companies building on and contributing to the XRP Ledger.

Specificities of the XRPL



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.

3. The XRP Ledger



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

3. The XRP Ledger



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

3. The XRP Ledger



In 2022, the community adopted a native NFT standard



Mint

Create non-fungible tokens on the XRP Ledger through a simple transaction



Trade

Create offers to buy or sell NFTs on marketplaces, storefronts, or even directly on the XRP Ledger



Monetize

Built-in royalties for NFT issuers upon every secondary sale



Display

Extensive metadata, including titles, descriptions, and images with hosting options such as HTTP, IPFS, and more



Programmability

XRP Ledger & its native NFTs offer deep optionality, including tradability, burnability, payment types, and more



Build

Robust APIs, libraries, and tooling to enable powerful NFT use cases without complex and costly smart contracts

3. The XRP Ledger



Protocol contributors are building a full suite of institutional-grade capabilities to expand use cases on XRPL

- Amendment up for voting

Decentralized Identity

Interoperable global standard to enable identity management for compliance, authentication, & access management

- Amendment up for voting

XRPL Sidechain

Customize a version of the XRPL to the needs of a specific use case / business while remaining interoperable

- Amendment up for voting

EVM Sidechain

Bringing full programmability to the XRPL in familiar EVM environments

- In Development

Atomic Transactions

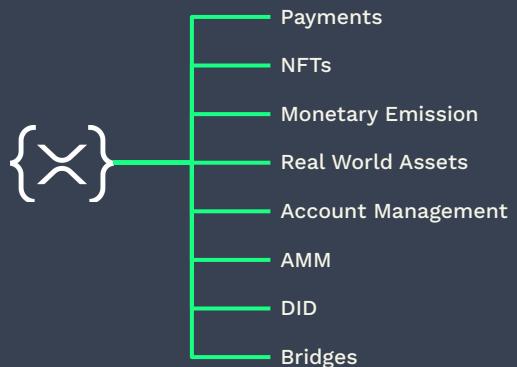
Bundle transactions so they are executed all or none

- In Development

Lend / Borrow

Protocol native lending and borrowing functionality without needing smart contracts

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

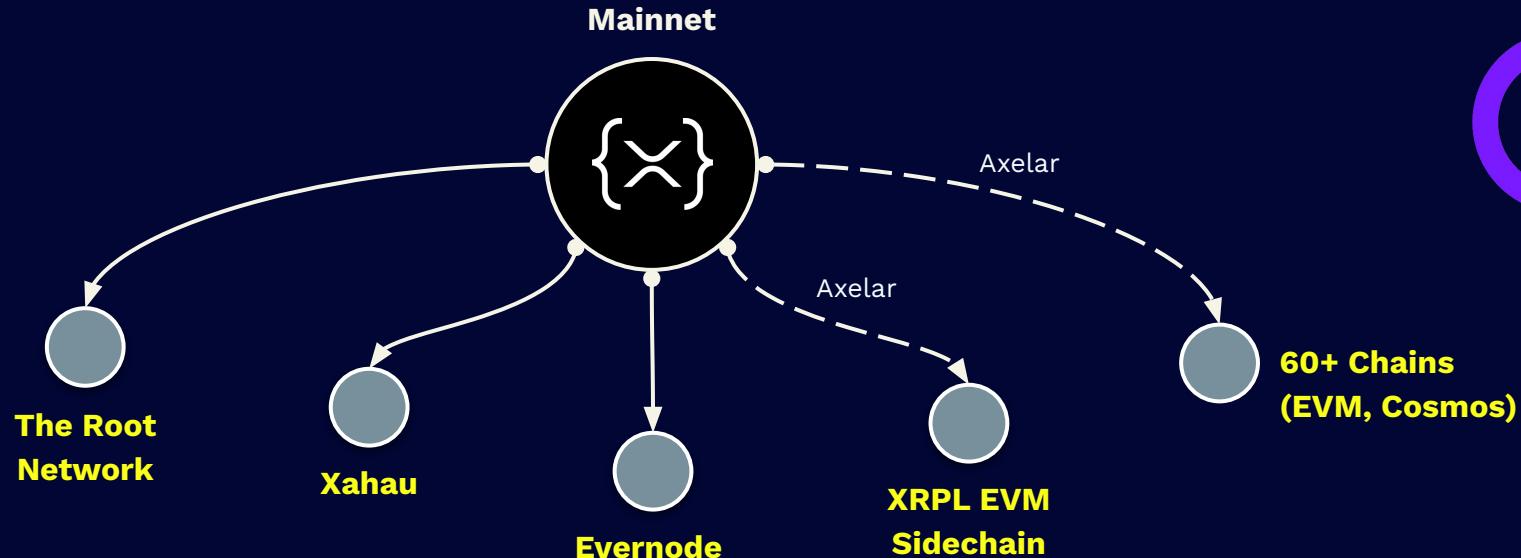
Astonishingly simple, you can get up and running on the XRP Ledger in as little as few lines of code using familiar programming languages (JS, Python, Java, and many more)

3. The XRP Ledger



The XRPL Extended Ecosystem

XRPL Mainnet interoperates with sidechains, to bridge XRP and tokens



Quiz Time



<https://forms.gle/8cPEQNWbLezUEH6U9>

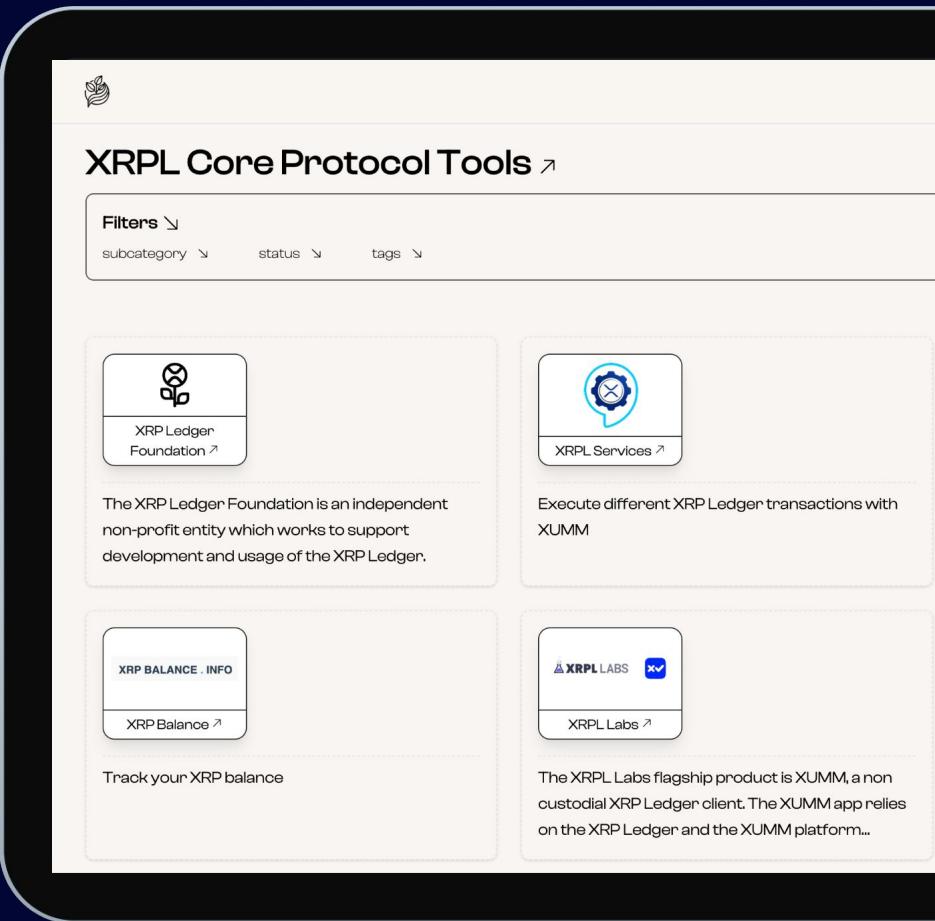


Resources

Ecosystem Map



🔗 <https://map.xrpl-commons.org>



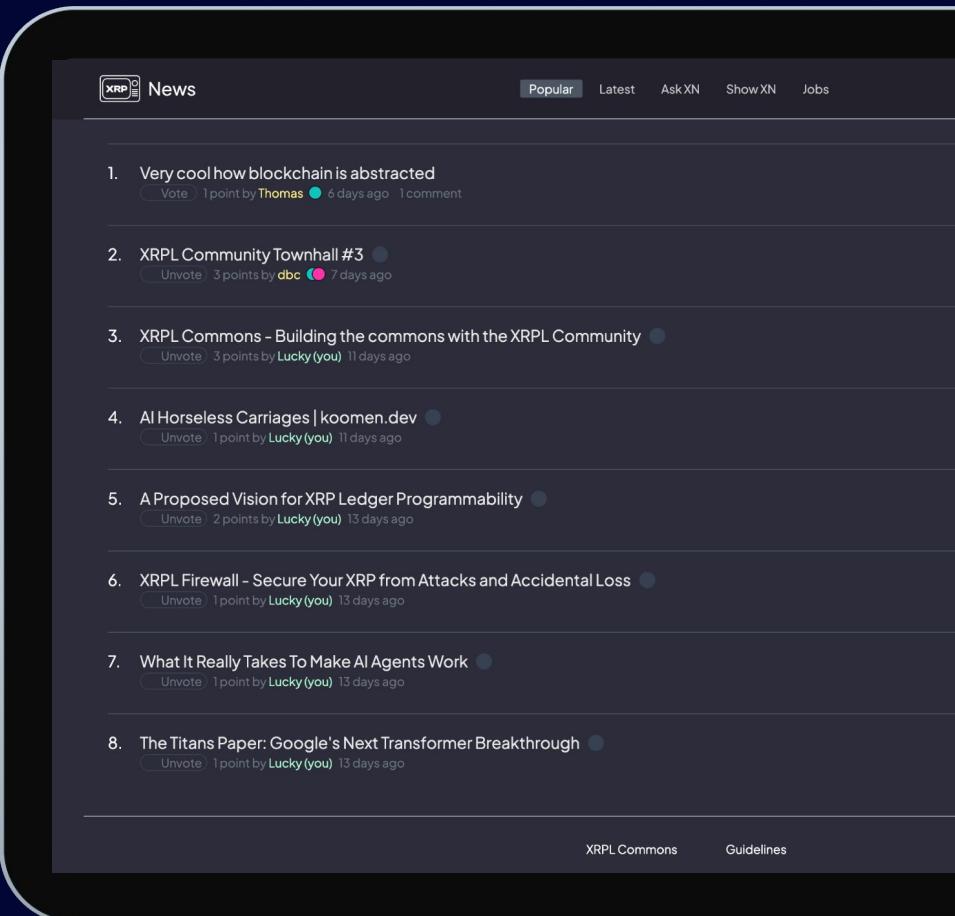
The screenshot shows a mobile application interface titled "XRPL Core Protocol Tools". At the top, there is a navigation bar with a flower icon, the title "XRPL Core Protocol Tools" with a right-pointing arrow, and three filter buttons: "Filters" (with a downward arrow), "subcategory" (with a downward arrow), "status" (with a downward arrow), and "tags" (with a downward arrow). Below the filters, there are four main cards arranged in a grid:

- XRP Ledger Foundation ↗**
The XRP Ledger Foundation is an independent non-profit entity which works to support development and usage of the XRP Ledger.
- XRPL Services ↗**
Execute different XRP Ledger transactions with XUMM
- XRP BALANCE . INFO**
XRP Balance ↗
Track your XRP balance
- XRPL LABS xv**
XRPL Labs ↗
The XRPL Labs flagship product is XUMM, a non custodial XRP Ledger client. The XUMM app relies on the XRP Ledger and the XUMM platform...

News



🔗 <https://news.xrpl-commons.org>



The screenshot shows the XRPL News homepage with a dark theme. At the top right are navigation links: Popular, Latest, Ask XN, Show XN, and Jobs. Below that is a header with the XRPL logo and the word "News". The main content is a list of 8 news items:

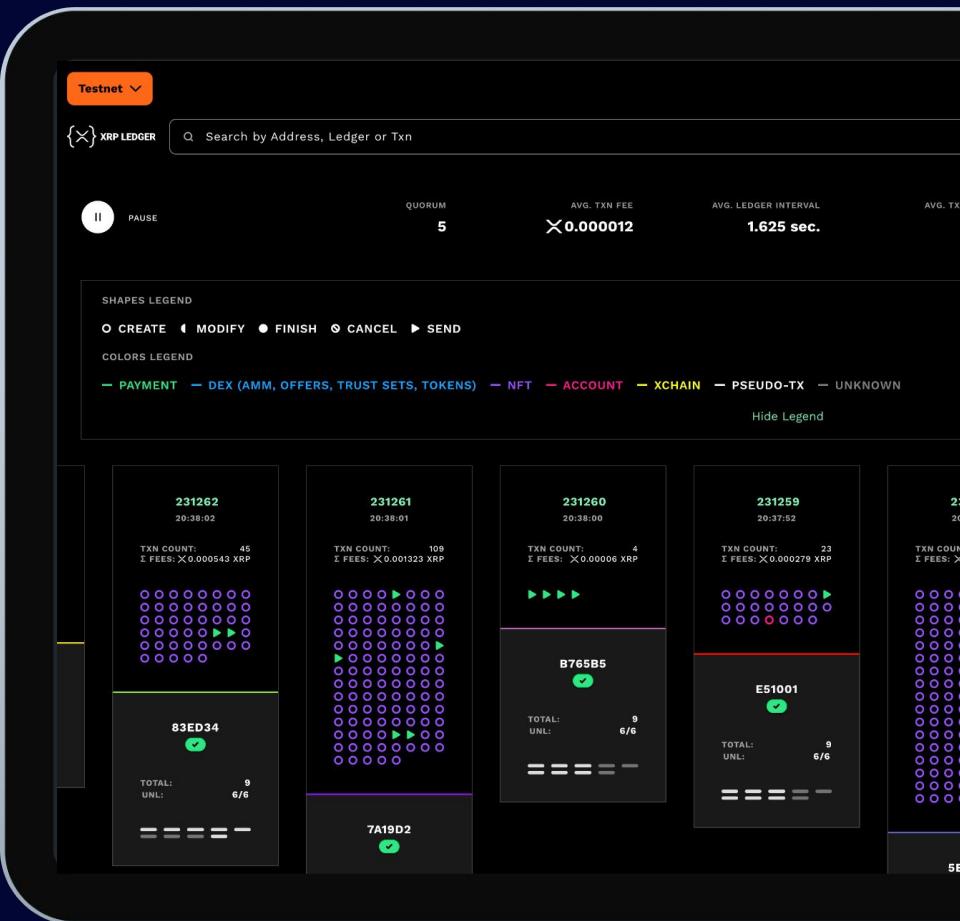
- Very cool how blockchain is abstracted
Vote 1 point by Thomas 6 days ago 1 comment
- XRPL Community Townhall #3
Unvote 3 points by dbc 7 days ago
- XRPL Commons - Building the commons with the XRPL Community
Unvote 3 points by Lucky (you) 11 days ago
- AI Horseless Carriages | koomen.dev
Unvote 1 point by Lucky (you) 11 days ago
- A Proposed Vision for XRP Ledger Programmability
Unvote 2 points by Lucky (you) 13 days ago
- XRPL Firewall - Secure Your XRP from Attacks and Accidental Loss
Unvote 1 point by Lucky (you) 13 days ago
- What It Really Takes To Make AI Agents Work
Unvote 1 point by Lucky (you) 13 days ago
- The Titans Paper: Google's Next Transformer Breakthrough
Unvote 1 point by Lucky (you) 13 days ago

At the bottom right are links to "XRPL Commons" and "Guidelines".

Block Explorer



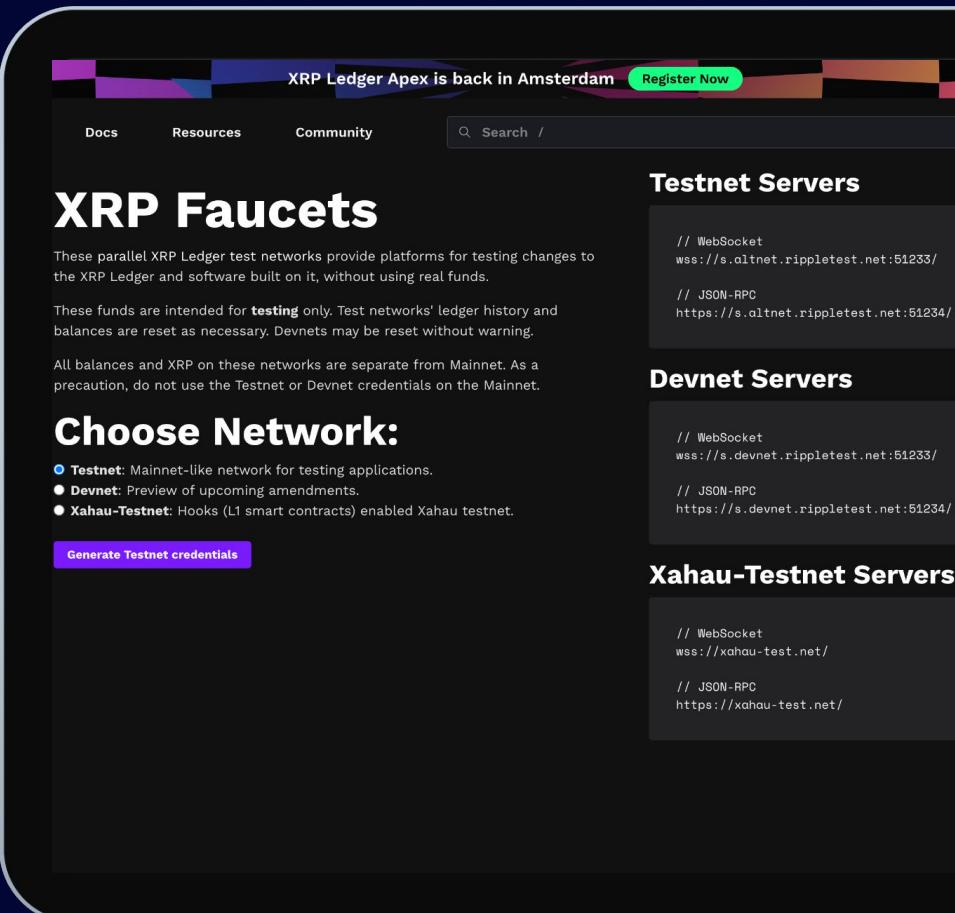
🔗 <https://testnet.xrpl.org>



Faucets



 <https://xrpl.org/resources/dev-tools/xrp-faucets/>



The screenshot shows the XRP Faucets page with the following content:

- XRP Ledger Apex is back in Amsterdam** (button: Register Now)
- Navigation: Docs, Resources, Community, Search /
- ## XRP Faucets

These parallel XRP Ledger test networks provide platforms for testing changes to the XRP Ledger and software built on it, without using real funds.

These funds are intended for **testing** only. Test networks' ledger history and balances are reset as necessary. Devnets may be reset without warning.

All balances and XRP on these networks are separate from Mainnet. As a precaution, do not use the Testnet or Devnet credentials on the Mainnet.
- ### Choose Network:

 - Testnet**: Mainnet-like network for testing applications.
 - Devnet**: Preview of upcoming amendments.
 - Xahau-Testnet**: Hooks (L1 smart contracts) enabled Xahau testnet.
- [Generate Testnet credentials](#)
- ### Testnet Servers

```
// WebSocket  
wss://s.altnet.ripplestest.net:51233
```

```
// JSON-RPC  
https://s.altnet.ripplestest.net:51234
```
- ### Devnet Servers

```
// WebSocket  
wss://s.devnet.ripplestest.net:51233
```

```
// JSON-RPC  
https://s.devnet.ripplestest.net:51234
```
- ### Xahau-Testnet Servers

```
// WebSocket  
wss://xahau-test.net/
```

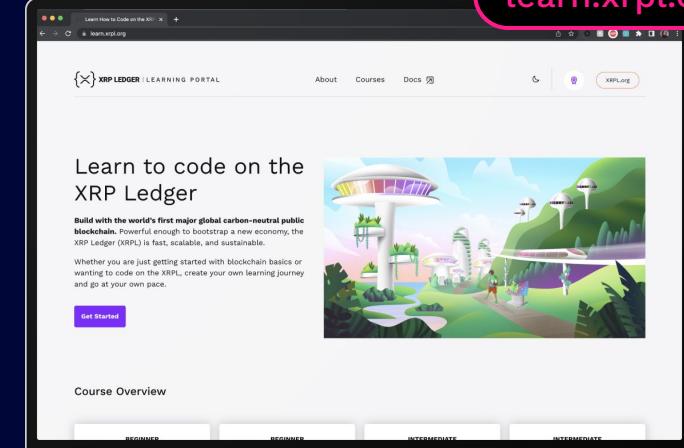
```
// JSON-RPC  
https://xahau-test.net/
```

Documentation and learning



The screenshot shows the XRPL Documentation homepage. It features a dark background with a purple abstract graphic on the left. The main heading is "What Would You Like to Learn?". Below it are two sections: "Browse By Popular Topics" and "Browse By Label". The "Popular Topics" section lists items like Send XRP, Reserves, XRP Faucets, Run rippled as a Validator, Build and Run rippled in Reporting Mode, Introduction to Consensus, and Public API Methods. The "Label" section lists categories such as Accounts, Blockchain, Checks, Core Server, Cross-Currency, Data Retention, Decentralized Exchange, Development, Escrow, Fees, Non-fungible Tokens, NFTs, Payment Channels, Payments, Smart Contracts, Security, Tokens, Transaction Sending, and XRP.

Source of all XRPL documentation



The screenshot shows the XRPL Learning Portal homepage. The title is "Learn How to Code on the XRPL". It features a large image of a futuristic, green-themed blockchain city with flying cars and stylized buildings. Below the image, there's a "Get Started" button and a "Course Overview" section with four categories: BEGINNER, INTERMEDIATE, and two labeled as INTERMEDIATE.

Learn the basics of coding on XRPL

<https://github.com/XRPL-Commons/xrpl-commons-january-2024>

Training Documentation



<https://github.com/XRPL-Commons/xrpl-training-2025-may>

