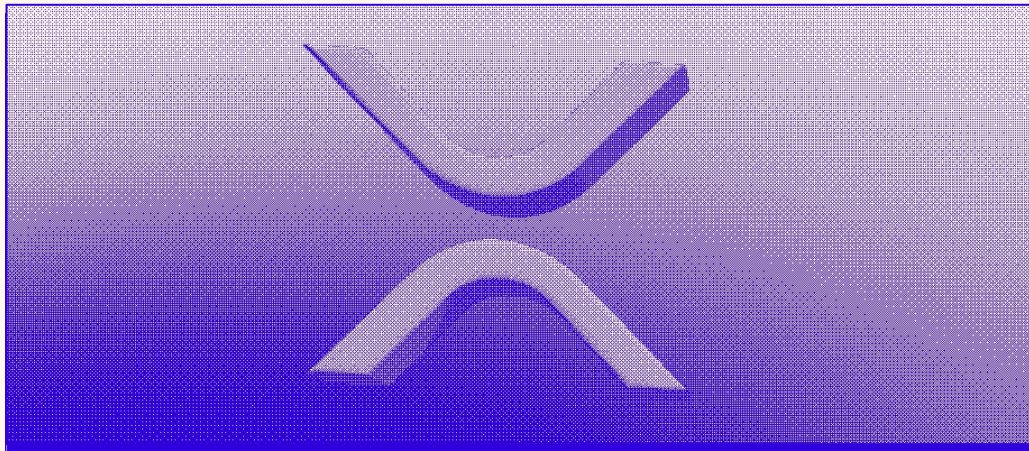


# INTRODUCTION TO XRPL

Online Builder Training



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## Here's how to handle it:

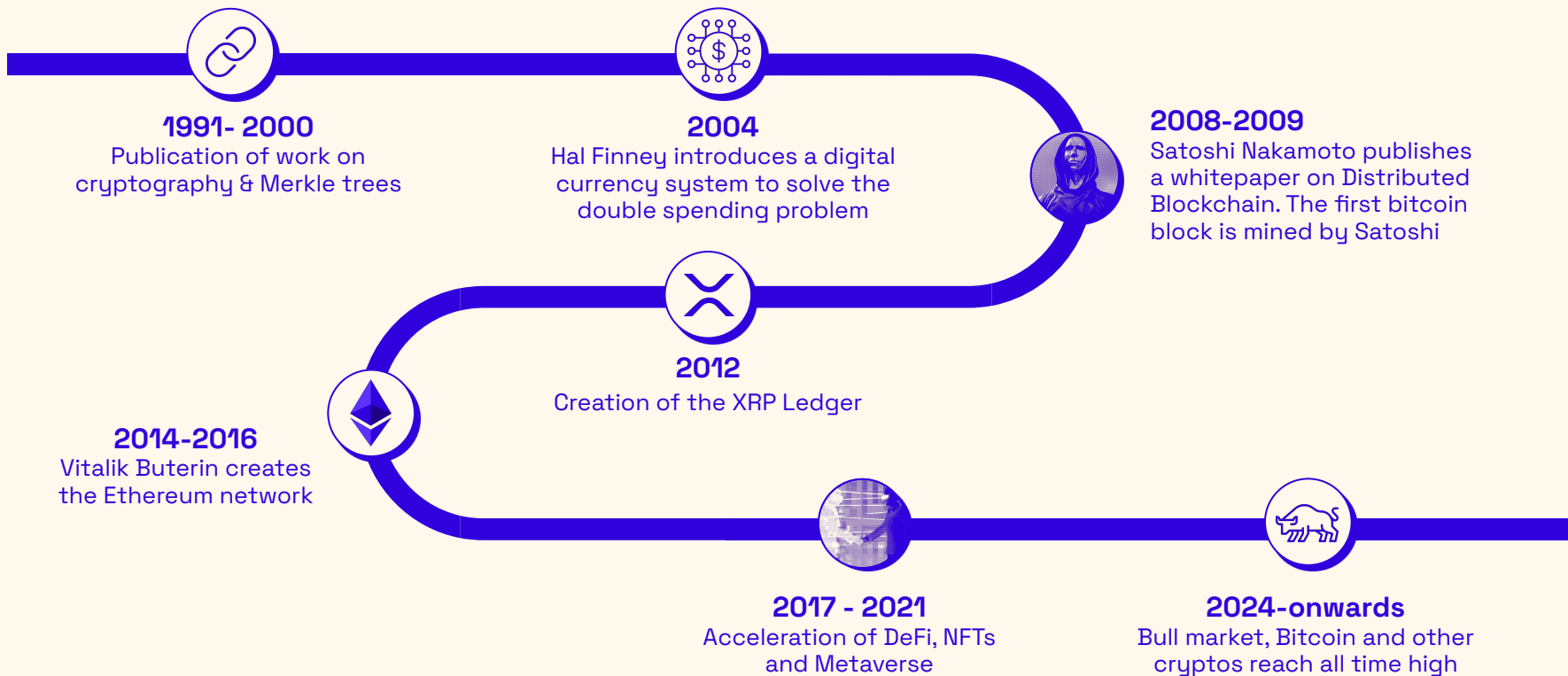
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# A Brief History of Blockchain



# 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.

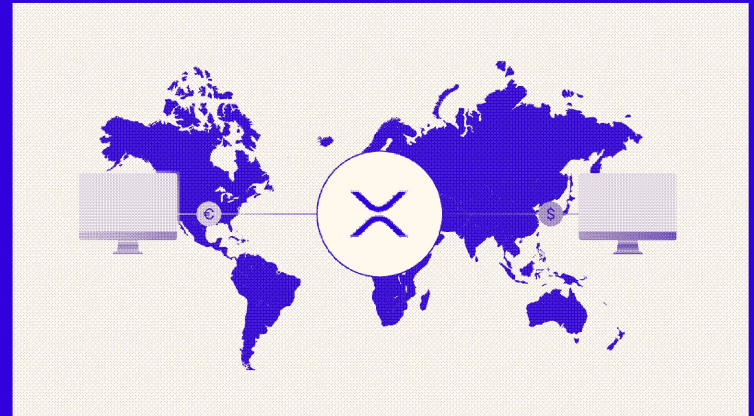
If a node ever encounters two conflicting ledgers it would just go with the one that was validated by more nodes that it trusts.

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

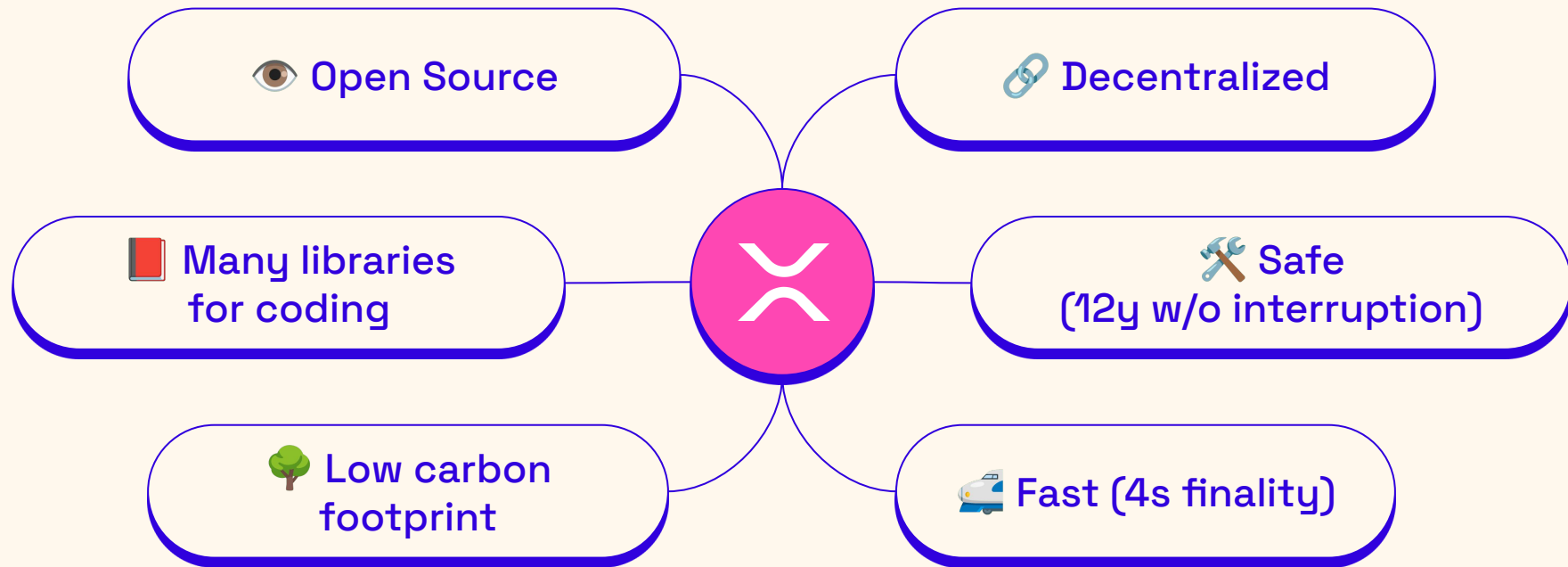
There would be a way to look up particular nodes in the network and ask them questions. (I'm imagining this whole thing running on Kademia, a DHT)

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



# 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

# A Few Numbers

**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

**~\$120B+**

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

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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.



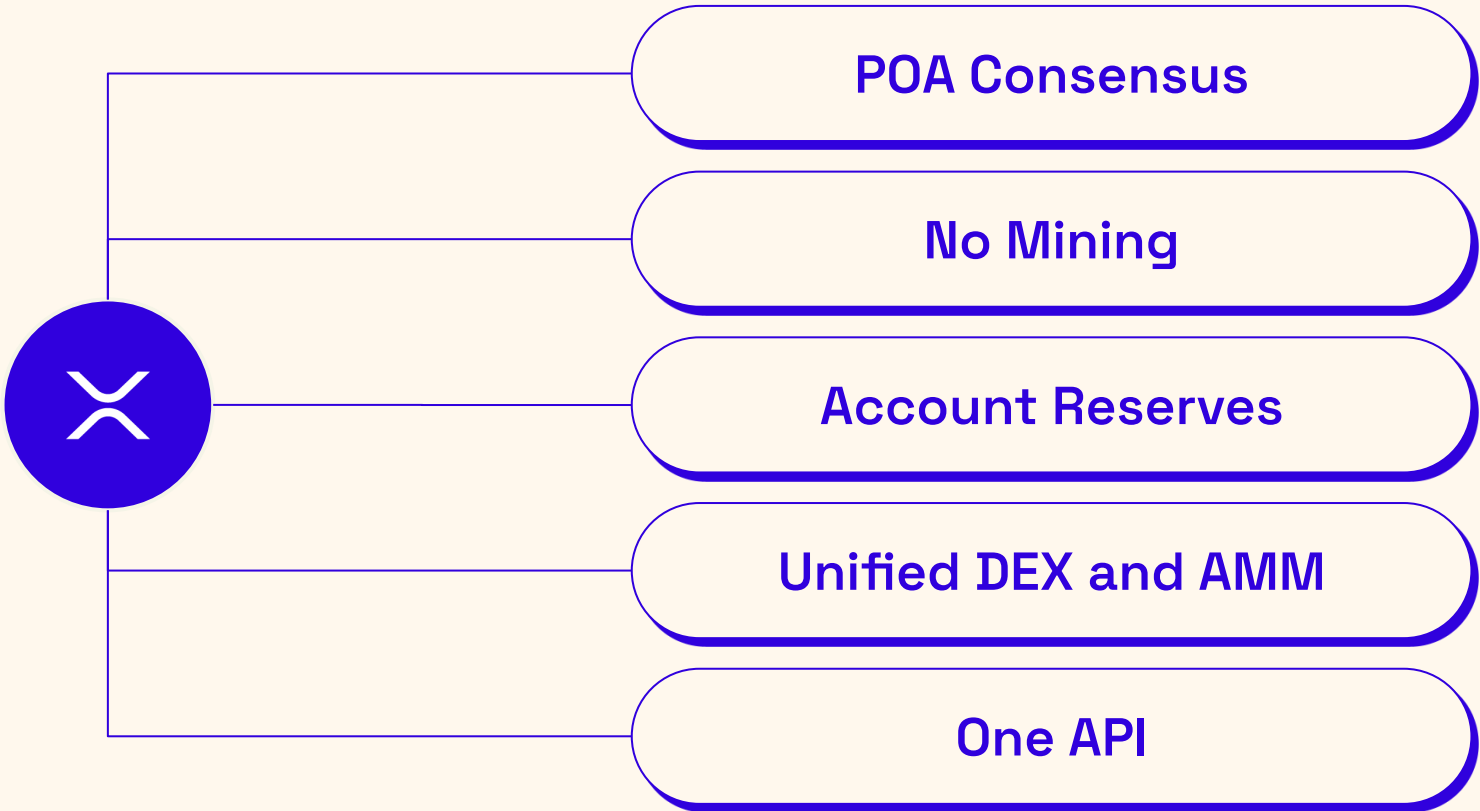
## Crypto Solutions Company

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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.

# The protocol native DEX

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

## Protocol Features

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

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**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

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**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

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**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

# 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

# Building Institutional-Grade XRPL

Protocol contributors are expanding use cases with a full suite of capabilities

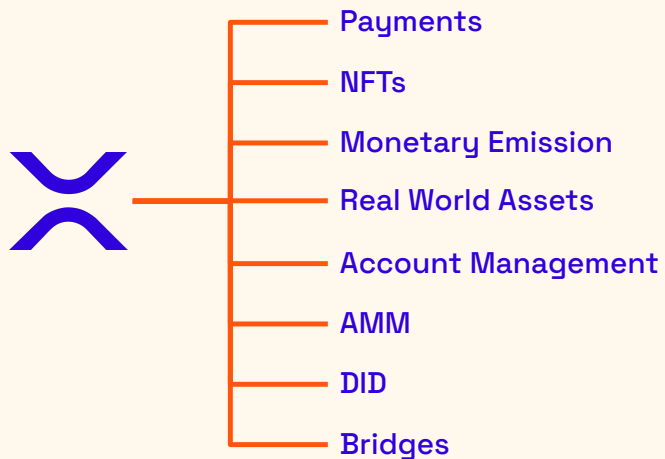
## Amendment up for voting

- **Lend / Borrow**  
Protocol native lending and borrowing functionality without needing smart contracts

## In Development

- **Confidential Transfers**  
Provides institutional-grade privacy for Multi-Purpose Tokens using advanced cryptography.
- **Smart Escrows**  
Supports custom escrow release conditions implemented with WebAssembly.

# One Endpoint to do all the things




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## Single API

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

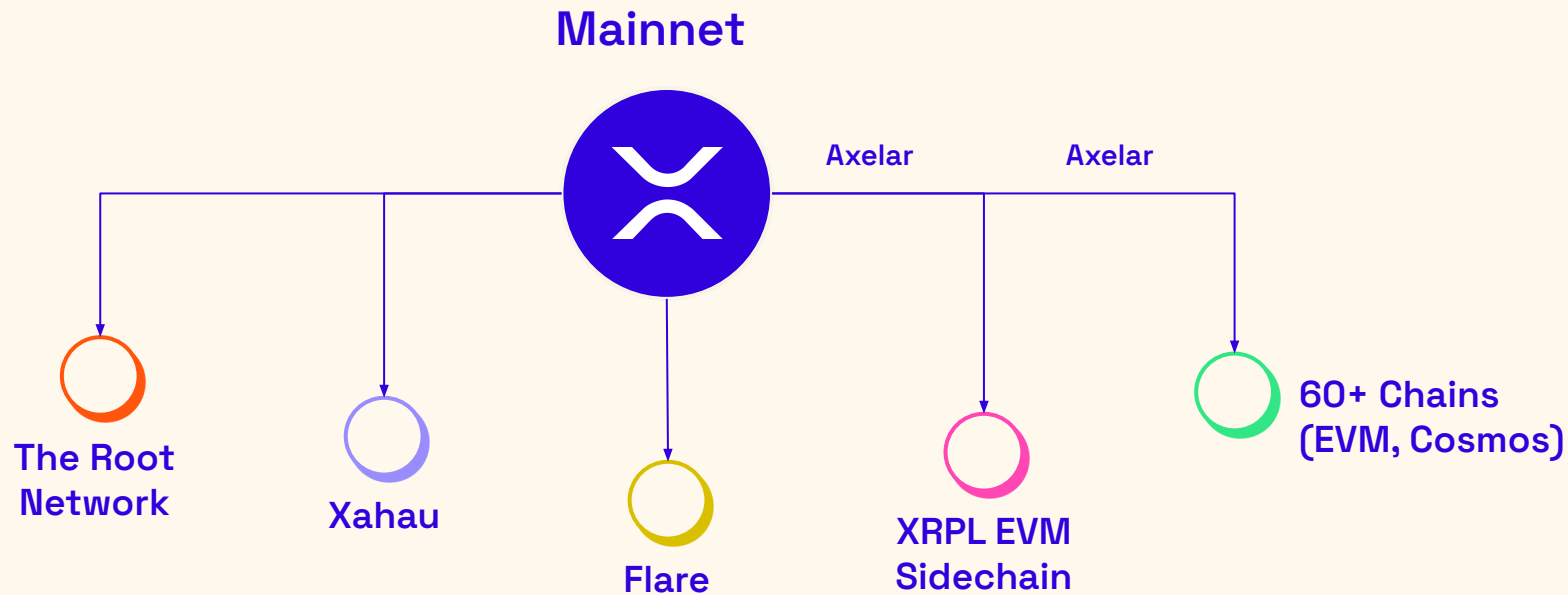
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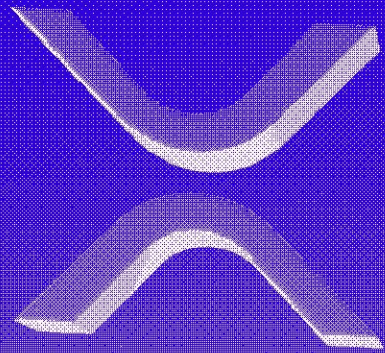
## Minimal Code Required

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





**XRP LEDGER**