



Changing the record

Using substrate to add a custom blockchain to your IPFS Dweb app.

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How to deploy your dApp?

IPFS Blogging on the Decentralized Web



Cool content addresses don't change.

- LESSON 1 ➤ Link an author to a blog post using its CID
- LESSON 2 ➤ Update posts with tags and watch their CIDs change
- LESSON 3 ➤ Build a tag cloud with arrays of links
- LESSON 4 ➤ Add a new blog post linked to an author and tags
- LESSON 5 ➤ Add a new tag linked to multiple blog posts
- LESSON 6 ➤ List posts chronologically with a chain of links
- LESSON 7 ➤ Traverse through all posts, starting with the most recent

How to “host” that *latest* Cid?

- Through a http server

But that is centralised again 🙄

- Via a DNS entry

Also centralised ... and sooo sloooooow 🙄

- Libp2p PubSub!

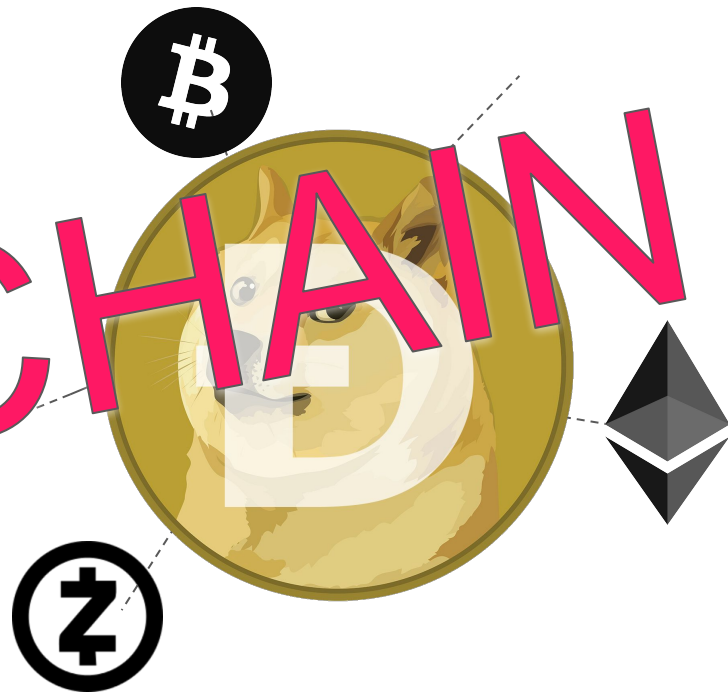
But allows everyone to write and doesn't guarantee persistence 😬

Features of our “hoster”

- Global record
- decentralised
- simple KV-datastore
- permissioned read-access

BLOCKCHAIN

Decentralised
registry (DB)



What is **blockchain**?

- effectively a **distributed state-machine**
- with a predefined transition agreement system “consensus”
- of sets of transactions, packaged as “blocks”
- based on a historic record, the “chain”
- Block->Block->Block->...->GenesisBlock

Smart-Contract-Chain

- + Existing stable network(s)
 - + Rel. easy to build & deploy
 - Bound to their primitives
 - Smart Contract Model
 - Limited control over scaling
- issues & costs: Everything
costs the user

Self-Made Chain

- + Full control over: code, primitives, economics, scalability & costs
- Usually a **lot of work**
- Needs its own network
- Incompatible with existing networks

Substrate ...

- ... is a general purpose **blockchain development** kit
- ... is written in **type-safe Rust** and WebAssembly (“wasm”)
- ... let's you get started with your **own chain in 15min**

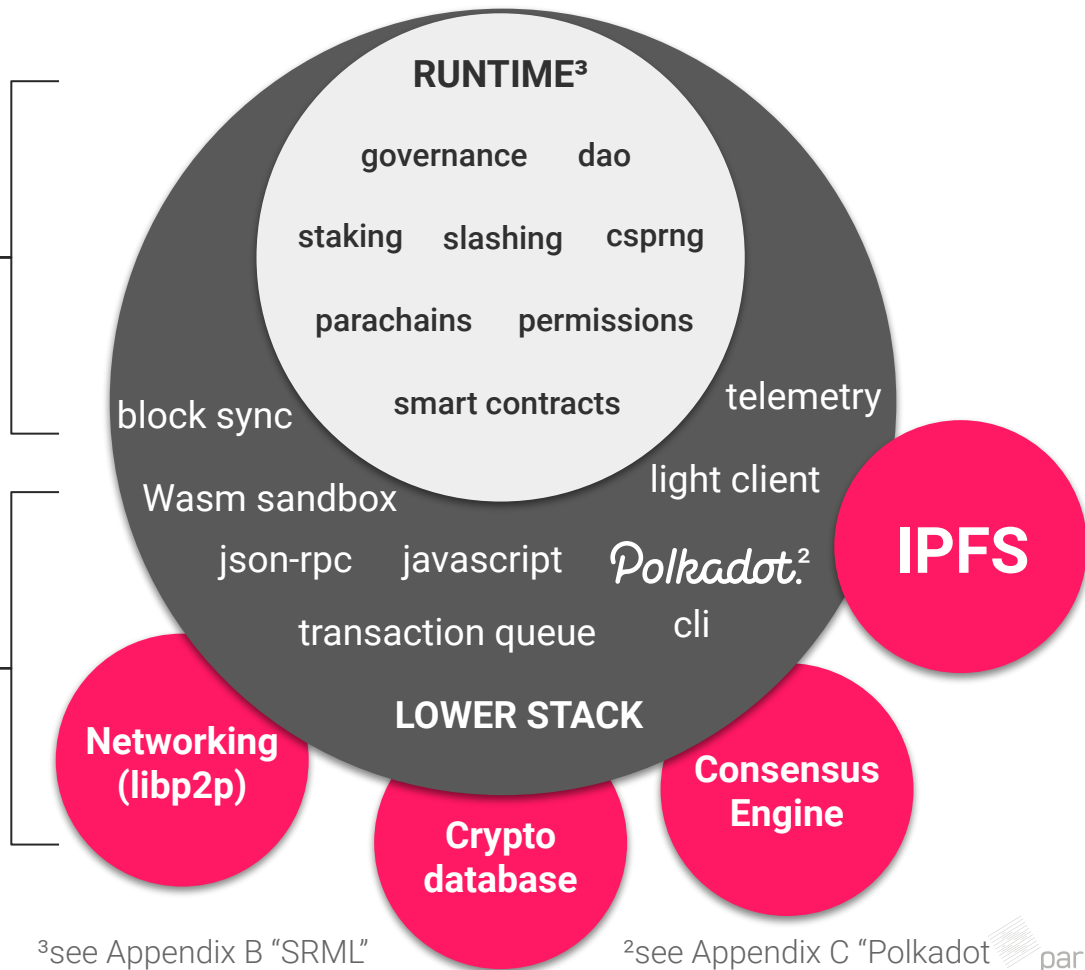


CHAIN-SPECIFIC RUNTIME

Stored & upgradable as
WASM-Blob *on-chain**
(*see Appendix A)

CLIENT INFRASTRUCTURE

Everything you need
to run a blockchain



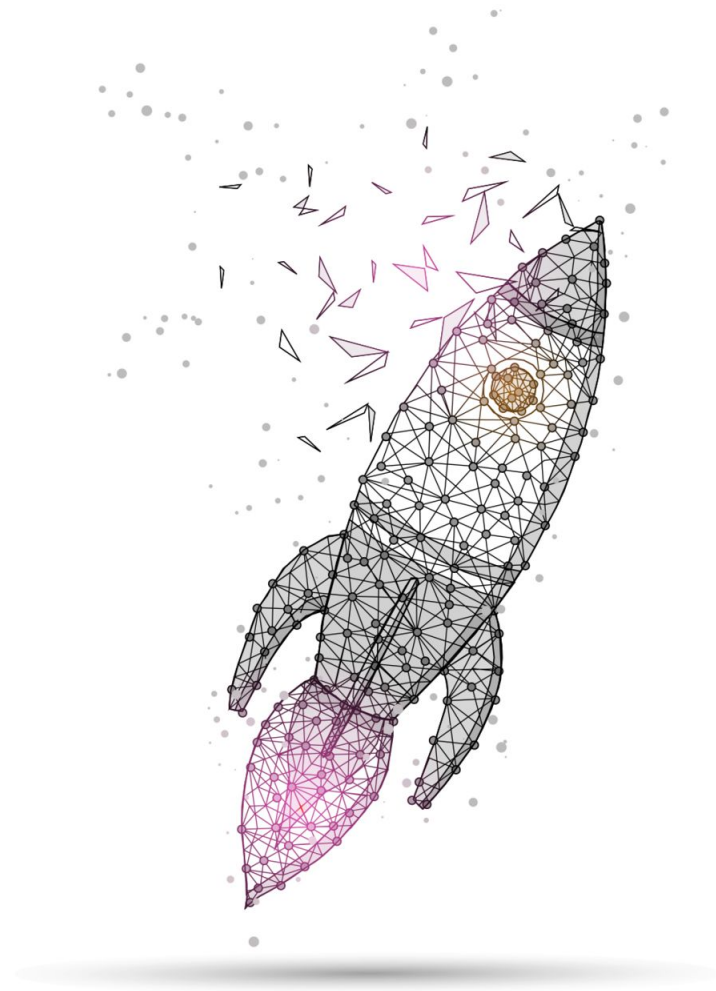
³see Appendix B "SRML"

²see Appendix C "Polkadot"  parity

Get Substrate and
launch your chain!

parity.io/substrate

learn substrate
tomorrow @unconf



Thursday
July 4th
12pm - 5.30pm

Carrer de Pau Claris,
162,
Barcelona

Substrate Workshop

Build a Custom Blockchain

Parity updates and events

parity.io/newsletter

ben@parity.io || @gnunicornBen

Appendix A

Forkless live runtime upgrades

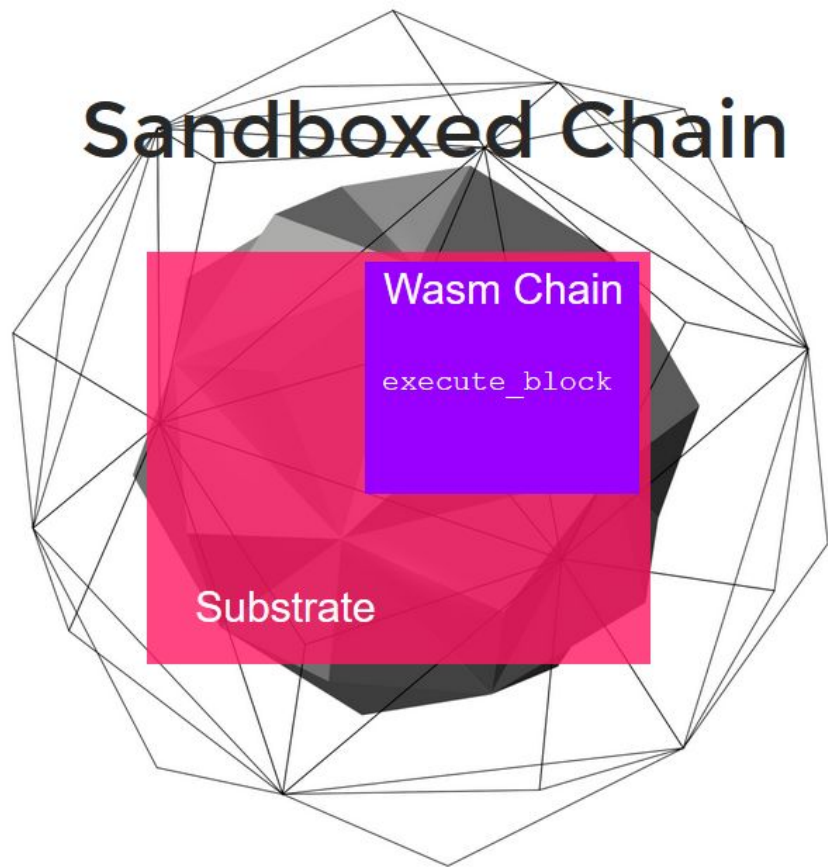
Runtime is compiled to WASM & stored at :code

WebAssembly ...*"wasm"*

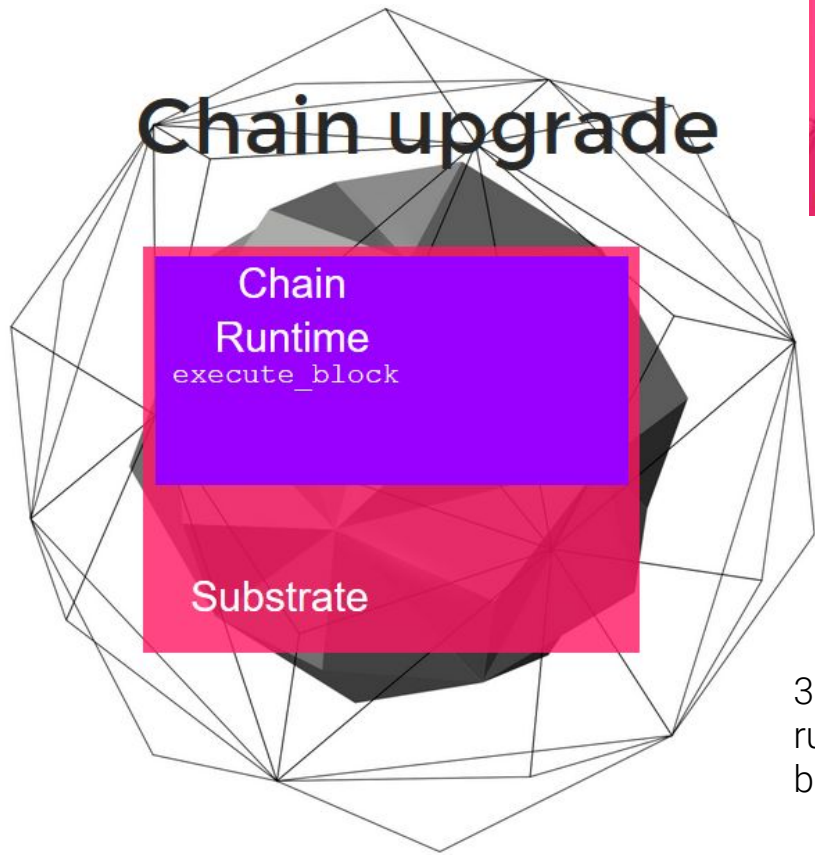
.. is a **web standard** for an **assembly like** compile-target to run code in Web Browsers as almost native speed

.. can be **compiled** to from many system languages (C, C++, rust, ...)

.. is execute in a sandboxed virtual environment



Chain upgrade



Chain
Runtime
`execute_block`

Substrate

Chain
Runtime
`execute_block`
`set_state(":code", )`

1 a block comes in
that triggers a set of
:code

Chain
Runtime
`execute_block`
`set_state(":code", )`

2 When the next
block comes

Substrate



+1

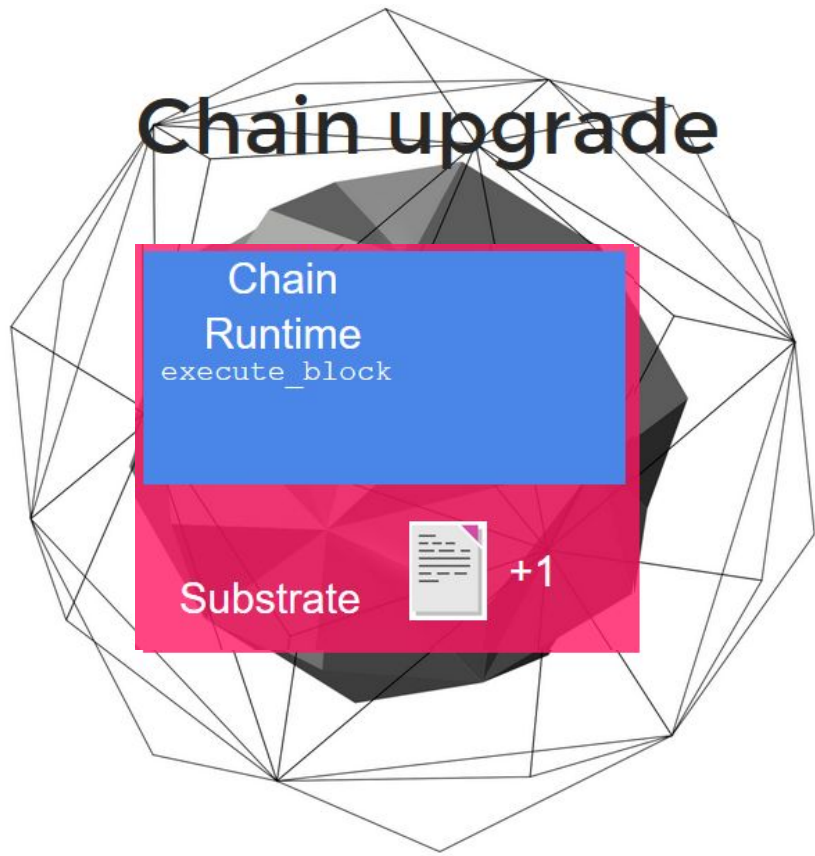
3 substrate notices the new
runtime and executes the new
block with it from now on

Chain
Runtime
`execute_block`

Substrate



+1

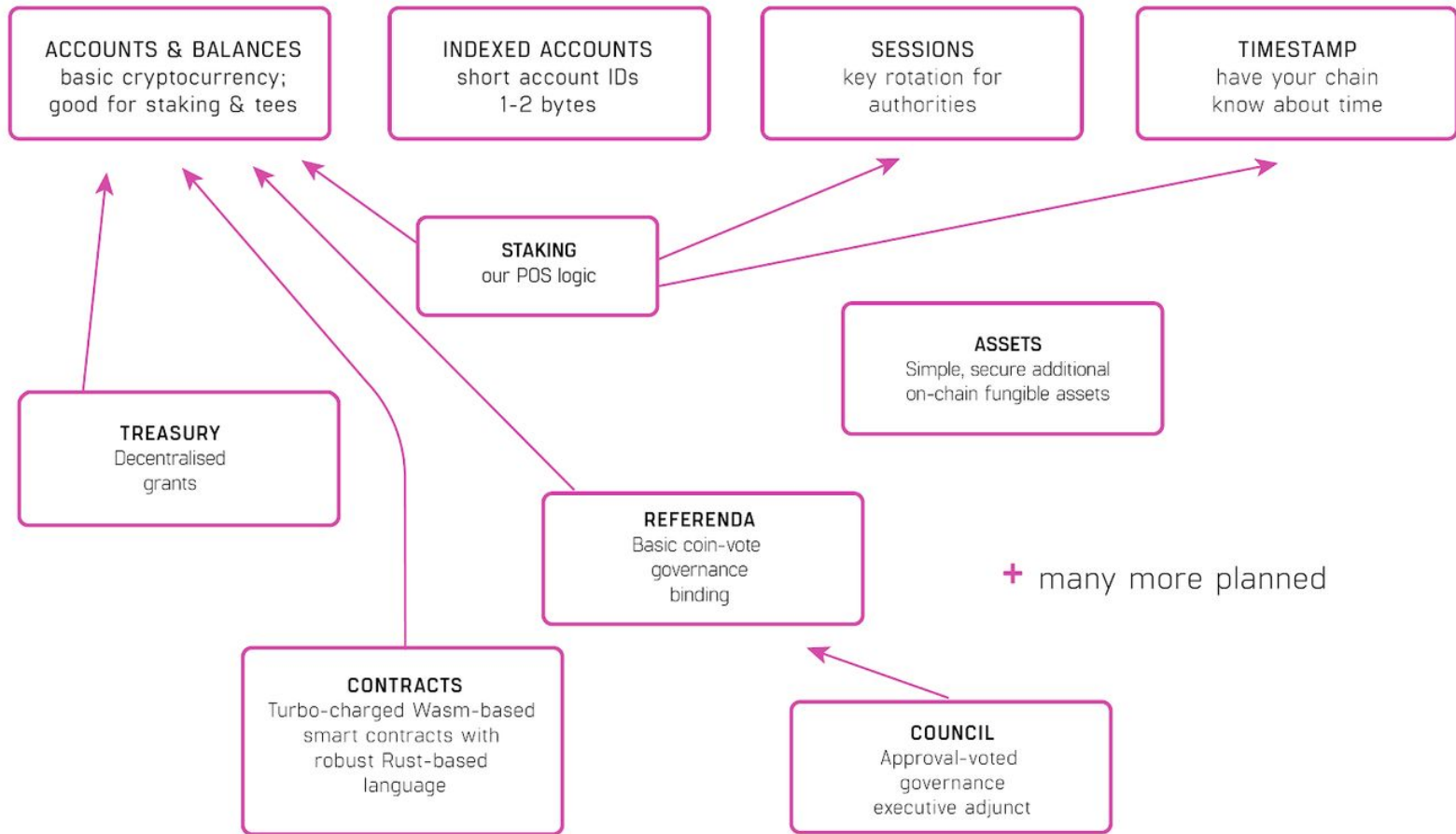


And as all clients have agreed on the new :code on-chain, they **must execute** it or can't author blocks anymore.

Of course, you can still fork, but it doesn't happen by accident anymore - Substrate itself comes with a Wasm Executor that will be used to run the code if the native version isn't sure it is compatible. From a passive threat, forking now requires intervention and makes it an active act.

Appendix B

Substrate Runtime Module Library
(SRML)



Appendix C

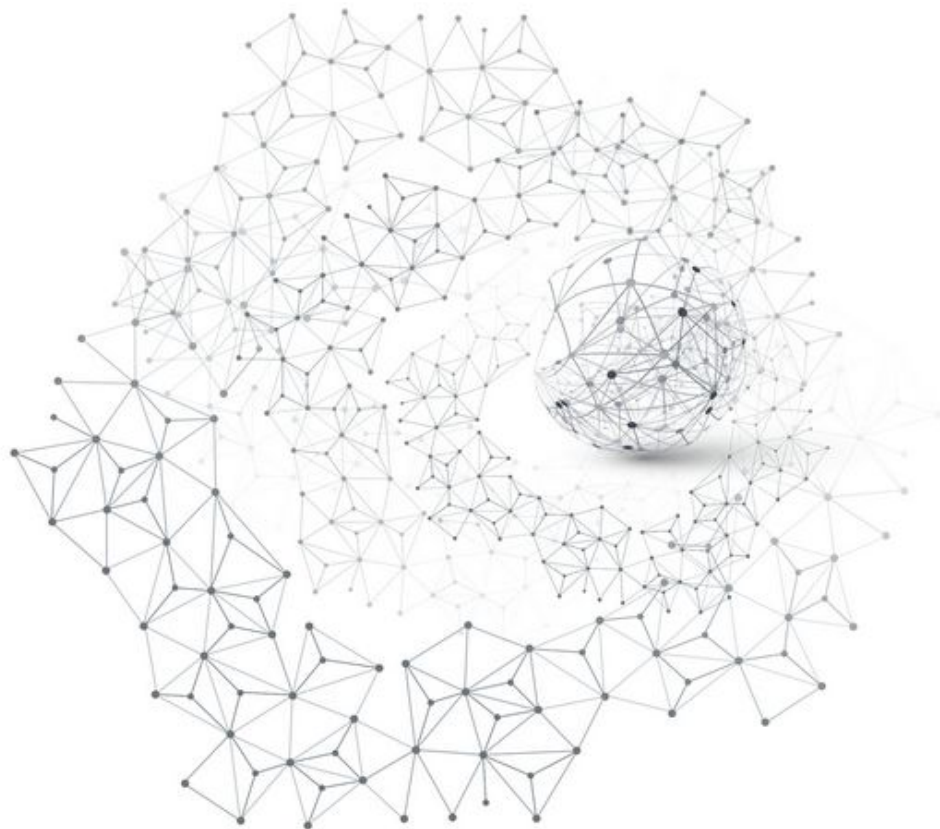


Polkadot is ...

... a heterogeneous **multi-chain** technology.

... a protocol that allows **independent blockchains** to **exchange information**.

... an **interoperability** layer, that **enforces order and the validity** of the messages between the chains



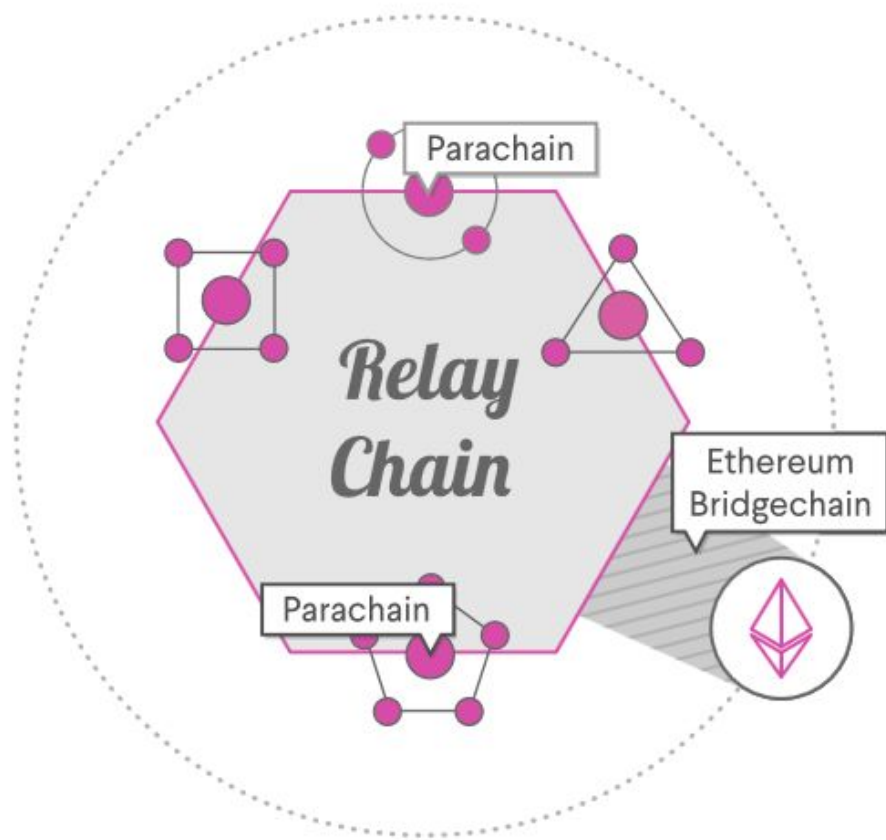
polkadot.network

but how?

Relay Chain, a blockchain which relays messages of other chains, at the core of network.

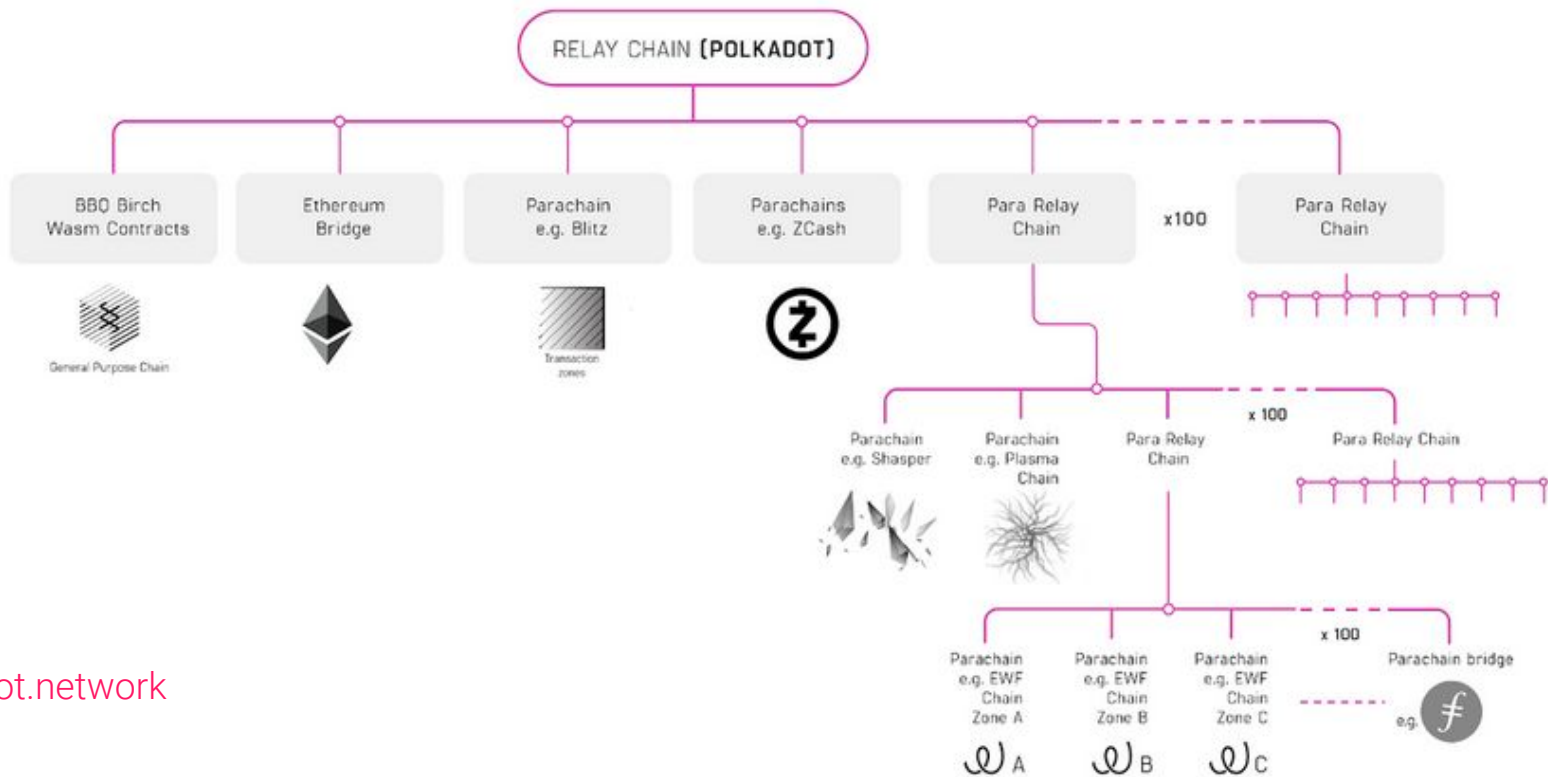
Parachains are separate chains run in and with direct knowledge of polkadot.

& **bridges** allow interactions with 3rd Party chains.



polkadot.network

Composable



polkadot.network