



# Applications and Services based on Blockchain

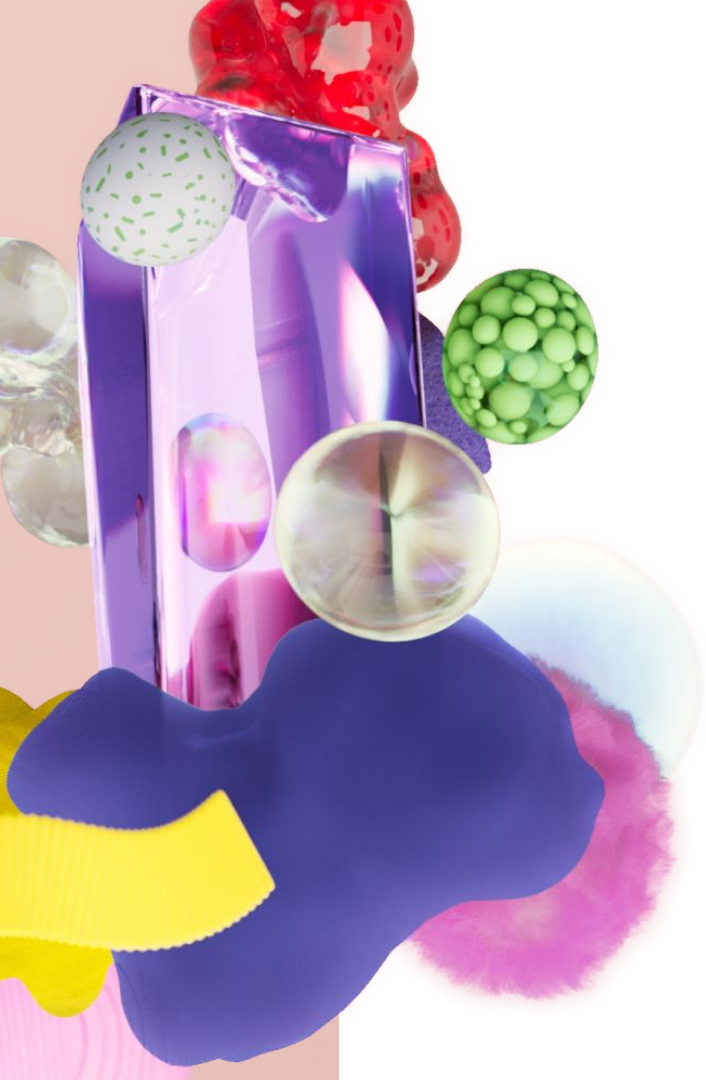
**Sonia Singla**

Developer Relations Engineer at Ignite



## SONIA SINGLA

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- Founder of TheCosmosLadies
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# Agenda

- Brief History of Blockchain
- Blockchain: Not just for cryptocurrency
- Get to know Cosmos ecosystem
- Hands on workshop using Ignite CLI
- Blockchain and Open Source
- Ways to Contribute



# What is Blockchain?

Distributed Ledger

Digital Database

**Isn't this overly simplified?**

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**Because it is**

**Let me break it down for you!!**



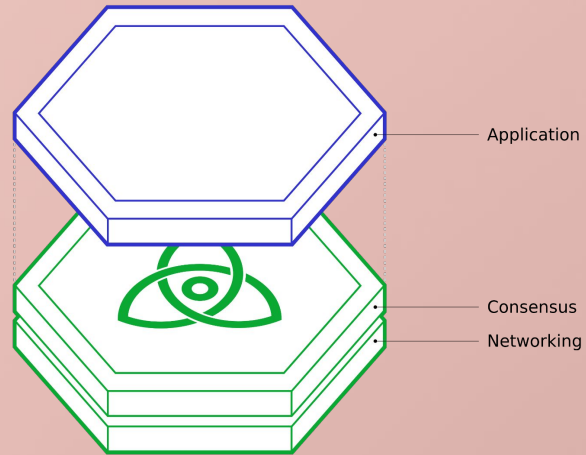
# **Brief History of Blockchain**



# Architecture Standpoint

A blockchain is a deterministic **state machine** replicated on **full nodes** that retains consensus safety as long as less than a third of its maintainers are **Byzantine**

# Architecture Standpoint





# What makes blockchain unique?

- Shared



# What makes blockchain unique?

- Shared
- Decentralized



# What makes blockchain unique?

- Shared
- Decentralized
- Open



# What makes blockchain unique?

- Shared
- Decentralized
- Open
- Cryptographically Secure



# Advantages of Blockchain

- Decentralized systems are harder to attack
- Decentralized networks function **peer-to-peer**, there's no need for intermediaries
- Data is **immutable**, **easy to track**, and **verified** through a consensus mechanism
- Public blockchain networks are **transparent**, have **open source code**, and are available to everyone
- Blockchains are more **secure** and **private**. You are the only one in charge of your data

# **How does Cosmos fit in the broader blockchain ecosystem?**





# 2008: Proof-of-Work

- Original consensus over how to validate new blocks that are added to the chain
- 14 years of securing Bitcoin network
- The work is generating a hash (a long string of characters) that matches the target hash for the current block
- High amount of computational power required to solve the mathematical equations and secure the network
- 75% of BTC is mined using renewable energy and could even incentivize renewal energy



# 2012: Proof-of-Stake

- Validators rather than miners validate transactions and verify the accuracy of new blocks to be added to the existing chain
- Validators validate the percentage of transactions equal to the stake of their holdings
- Security relies on economic incentives rather than energy
- Validators receive a block reward, just like miners
- If potentially fraudulent behavior is detected, like a double signing, validators are “slashed” and removed from the network



# 2014: Cosmos Proof-of-Stake

- Cosmos SDK uses a Delegated Proof-of-Stake (DPoS) consensus mechanism
- Users who hold that blockchain's coin are able to vote for delegates
- Uses a voting and delegation mechanism that makes the process more democratic



# Energy debate: PoS crypto-economics

- Energy debate surrounding Proof-of-Work (PoW) blockchains like Bitcoin and Ethereum
- 2014 problem solved by Tendermint co-founders and authors of the Cosmos Network whitepaper Jae Kwon and Ethan Buchman
- Research of Proof-of-Stake (PoS) and blockchain consensus mechanisms led to Tendermint Core — the first and most widely used implementation of a Byzantine Fault Tolerance (BFT) consensus engine and PoS crypto-economics

**Connecting blockchains together**

**Inter-Blockchain Communication  
protocol (IBC)**

# Scalability Problem?

# **Vision of Cosmos**

# **Vision of Cosmos**

## **Internet of Blockchains**



## An abstract collage featuring a central purple rectangular prism. Surrounding it are several spheres: a green one with white dots, a red one with a textured surface, a green one with many small bubbles, a yellow one with a textured surface, a blue one with a textured surface, and a pink one with a textured surface. The background is a mix of white and light pink.

- Make it easy for developers to build blockchains
- Break barrier between inter-blockchain by allowing them to transact with each other
- Maintain sovereignty, process transactions quickly and communicate with other blockchains in the ecosystem



# Cosmos Ecosystem

- Ignite is the core contributor to Cosmos ecosystem, the world's largest cross-chain network
- Creator of Cosmos ATOM
- Over USD 133 billion worth of digital assets
- 263+ apps and services
- 43 connected blockchains
- Visualize interconnected growing ecosystem in block explorers, like [mapofzones](#)



Altered Carbon



# About Ignite

- Founded in 2014, Ignite team developed and launched Tendermint Core and Cosmos SDK
- Core contributor to Inter-Blockchain Communication protocol (IBC) development
- Built key infrastructure tech for the Cosmos ecosystem
- Believes that the mainstream adoption of decentralized services is set to advance
- 124+ people working from 38 countries

# **Build your own blockchain**

# How?





# Ignite CLI

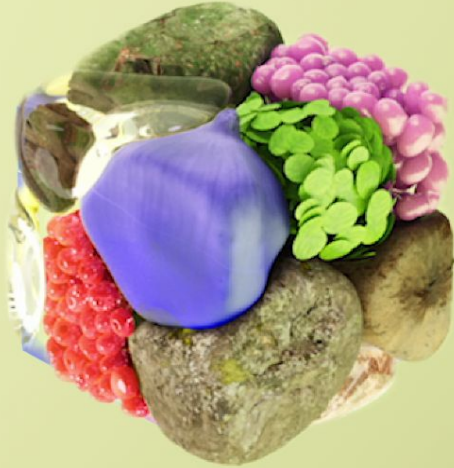
- All-in-one platform - build, launch, and maintain any crypto application
- Built on top of Cosmos SDK
- Accelerates chain development by scaffolding
- Lets you manage keys, create validators, and send tokens.



# Features of Ignite CLI

- Accelerate blockchain development
- Powerful code scaffolding
- Hot reloading server
- Cross-chain data transfer
- Prebuilt, ready-to-go apps

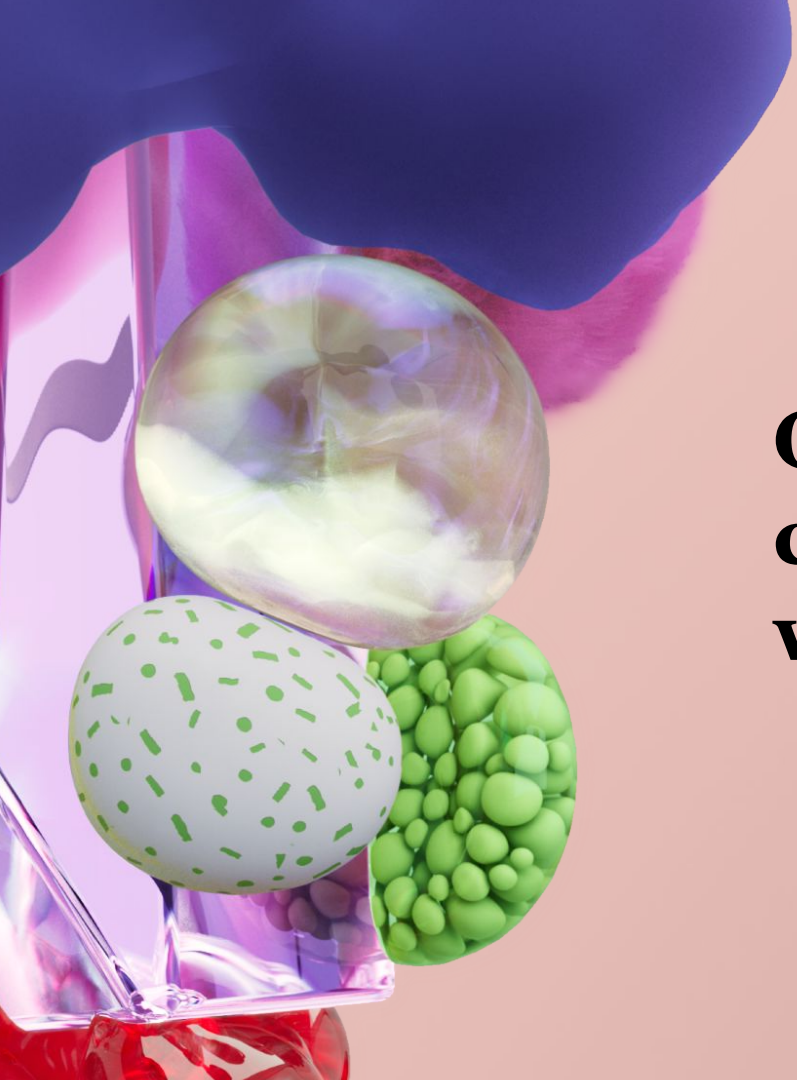




# Hands-on Workshop

A glass containing a drink with a blue liquid, a clear sphere, a green speckled sphere, and a green bubbly sphere.

**Open Source:  
More common than  
people think**

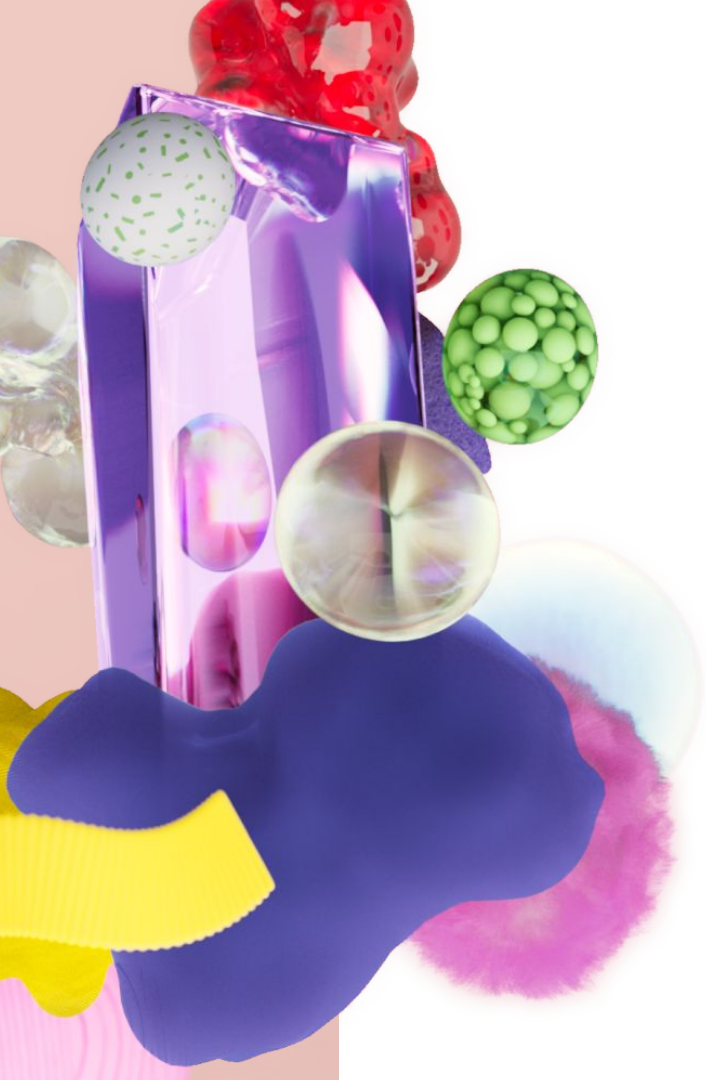
A glass containing a blue liquid, a clear sphere, a white sphere with green speckles, and a green sphere with small green bubbles.

**Openness is what  
creates its *security* as  
well as *reliability***



# Why contribute to Cosmos ecosystem?

- Real world experience
- Write cleaner and better code
- Network with the community
- Build an outstanding portfolio
- Gain recognition



# Ways to contribute

- Write code and test patches
- Stake assets or become validator
- Contribute to docs and tutorials
- Propose, suggest changes and support Cosmos
- Organize events in your city

**Bring out the Cosmonaut inside you!!**

# Cosmos Learning Resources

<https://github.com/soniasingla/cosmos-learning-resources>

# Keep in touch



**@soniasinglas**



**in/soniasinglas**