UNIVERSITY of NICOSIA

Week 4, Session 7

Investigating Examples of Layer 1 and 2 DLT Technologies

BLOC 528: Token Economics

Today's Overview

- Objective #1: Catch up on airdrops and governance tokens that we missed from last lecture.
- Objective #2: To learn more about L1 and L2 blockchains and their differences.
- Objective #3: To go through different examples and use cases of them.

Airdrops and Governance Tokens

Why Airdrops? (1/2)

- Reward users, most often those who were early to the project, and other influential users – Even though the token may not be valuable at its inception, these early users and allies are, by definition, aligned with the project and, therefore, believe that it has the potential to become successful eventually, making the tokens valuable to them.
- Promote community – Networks of users require not only shared objectives and interests, but also incentive systems for encouraging certain types of behaviors and discouraging others. Airdrops provide a way for project owners to bring people into a community who otherwise may not have engaged with it, as well as to reward members who may be active participants and demonstrating preferred behavior.
- Launch a project and generate media attention – Anytime there is an announcement, journalists are potentially interested in coverage. The more novel and impactful the announcement, the more likely it will galvanize broader interest. That is why the specifics of the airdrop, ranging from eligibility criteria to the amount to the broader vision of the project, are integral to the story that gets communicated in the media.

Why Airdrops? (2/2)

- Incentivize behavior – Depending on how the eligibility criteria are designed, the project owners can encourage a different type of behavior through the airdrop. For example, if a project is changing its strategy or broadening its base, the release of new tokens according to an eligibility criteria can move users in a new direction.
- Move non-crypto customers on chain – When a project has typically engaged with users off the blockchain, the use of an airdrop can move them on chain by giving tokens that grant access and value on chain, functioning as a key.
- Distribute ownership – Especially for projects that might have concentrated ownership, an airdrop can be used to further decentralize a community by changing the conditions to participate. However, project owners must still be careful not to alienate the existing users. Airdrops are yet another mechanism for shifting ownership, which is why projects generally leave up to 20% of tokens for them.

Airdrop Strategies

- Plain vanilla – No specific eligibility requirements and generally good for new projects that want to generate hype around a new offering
- Exclusive – Eligibility requirements favor the most loyal and oldest fans that have been with a project
- Bounty – No eligibility requirements other than the completion of a “bounty,” usually referring to posting on social media about the project
- Holder – Eligibility requirements hinge on holding a token for a specified time

Airdrops that reward existing token or NFT holders are gaining traction. For example, Bored Ape Yacht Club (BAYC) airdropped serums allowing BYAC holders to mint mutant apes or sell the serums on the open market (with one serum going out for more than $5 million).

In the case of collection-based NFTs it is easier to identify community members and stakeholders where tokens tend to be issued for utility or governance purposes within the broader NFT use case. This could be, again, relatively easy to game for insiders. Airdrops based on real interactions are harder to game.

Airdrops and Governance Tokens

- Data on 477 exchanges from CoinGecko between 2016-2021
- Manually determine if there is a governance token and/or airdrop, and whether the exchange is a decentralized or centralized exchange
- Airdrops and governance tokens have positive effects, but only for DEXs

	Market Capitalization (Growth)				Volume (Growth)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Decentralized Exchange (DEX)	-.003	-.011	-.106	-.017	.096	.100	.040	.090
	[.038]	[.041]	[.071]	[.041]	[.081]	[.082]	[.116]	[.086]
Airdrop		.022	-.025	.004		.093*	.069	.070
		[.033]	[.037]	[.036]		[.051]	[.058]	[.052]
× DEX			.131*				.086	
			[.066]				[.116]	
Governance Token	-.032	-.071	-.061	-.147*	-.074	-.057	-.049	-.183
	[.055]	[.053]	[.052]	[.076]	[.101]	[.090]	[.086]	[.122]
× Airdrop				.149*				.254*
				[.081]				[.140]
log(Volume)		.013**	.014***	.013**				
		[.005]	[.005]	[.005]				
Trust Score Rank								
Established in 2017	-.003	.020	.056	.027	.117	.043	.061	.050
	[.016]	[.046]	[.046]	[.044]	[.090]	[.096]	[.098]	[.096]
Established in 2018	-.050*	-.004	.013	.003	.087	.051	.059	.061
	[.026]	[.043]	[.045]	[.044]	[.092]	[.094]	[.095]	[.095]
Established in 2019	.083**	.095***	.124***	.111***	.312***	.246**	.262**	.268**
	[.034]	[.034]	[.038]	[.038]	[.107]	[.114]	[.118]	[.115]
Established in 2020	.101*	.116**	.182***	.159**	.316*	.270*	.307*	.337**
	[.055]	[.051]	[.053]	[.063]	[.161]	[.147]	[.162]	[.167]
R-squared	.34	.35	.36	.36	.16	.16	.16	.16
Sample Size	940	940	940	940	1327	1327	1327	1327
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Considerations for Airdrops

- Think about your target audience – what do they value
- Avoid yield farmers – structure incentives so that you must hold for a certain duration of time
- Create partnerships and mutual value – your airdrop can have benefits for allied organizations too
- Airdrop tiers – some users can build up and get encouraged to participate more fully so that they redeem the entire set of tokens if certain conditions are met
- Time it properly – coordinate around other organizational activities, and don't overuse it

Nonetheless, important to take proper precautions so your airdrop is not perceived as a scam.

Challenges to Valuation (and Solutions)

First, tokens have short time horizons, so there's not a lot of data.

- Look at comparable tokens – look at not only the market, but also the strategy.
- Think about the unit of time – you might have hourly data, but it's not necessarily fully informative.

Second, traditional valuation models assume cash flow and dividends in perpetuity, but so much is changing.

- Use reasonable time horizons and do not over promise – better to come off as credible about a short run strategy that has clear long run implications than to over promise an unrealistic goal.
- Focus on convincing people about the vision, not the exact step by step execution.

Third, there is no "risk free" rate for comparing crypto investments.

- Not a big issue – just think about alternative investments in the market.

Fourth, there is systemic risk on the underlying blockchain.

- Choose the layer 1 integration carefully, and explore multi-bridge technologies.

https://www.coindesk.com/markets/2017/03/03/a-framework-for-valuing-crypto-tokens/

Purpose of Valuation

The purpose of valuation is not to come up with a perfect number, but rather to create a temporary guidepost that helps enhance the strategy and discipline short-term decision-making.

Too many factors of uncertainty exist, most notably the development of the underlying platform and user base, so most assumptions about growth are going to be wildly incorrect.

- Critical human resource (e.g., CTO) could quit
- The SEC could hit you with a billion or more dollar fine (!)
- …

Alternative L1s to Ethereum

There are various reasons Ethereum is preferable – even with all its limitations.

- It's a big ecosystem – there are economies of scale to building on it
- Tested and true – fewer concerns about whether it can withstand the load
- Building is easier – much faster to find competent dApp developers (and developers more generally)

Nonetheless, many have built alternative L1 protocols.

- Solana
- Binance Smart Chain (highly *centralized*)
- Cardano
- Polkadot
- Avalanche
- Algorand

https://blog.fasset.com/top-layer-1-projects-and-prospects

Deeper Dive into Solana

Alternative consensus mechanism

- Proof of History allows “timestamps” to be built into the blockchain through a verifiable delay function. These timestamps are synchronized across nodes to avoid manipulations and discrepancies.
- Saves time by avoiding validators from having to communicate with one another to converge on a state of the blockchain and approve transactions.

“Every block producer has to crank through the verifiable delay function (VDF), this proof of history, to get to their assigned slot and produce a block,” says Anatoly Yakovenko, co-founder of Solana Labs.

- The state, input data, and count are all published — and impossible to recreate or create alternate versions of. This sets up an upper bound on time — and because Proof of History can reference previous hashes, there is also a lower bound of time.
- Any individual node can validate the entire chain with just a small piece of information — even if they’re not connected to the rest of the network.

https://solana.com/news/proof-of-history

Deeper Dive into Avalanche

Alternative consensus mechanism that uses a directed acyclic graph (DAG) protocol so that transactions can run in parallel and be randomly sampled in parallel.

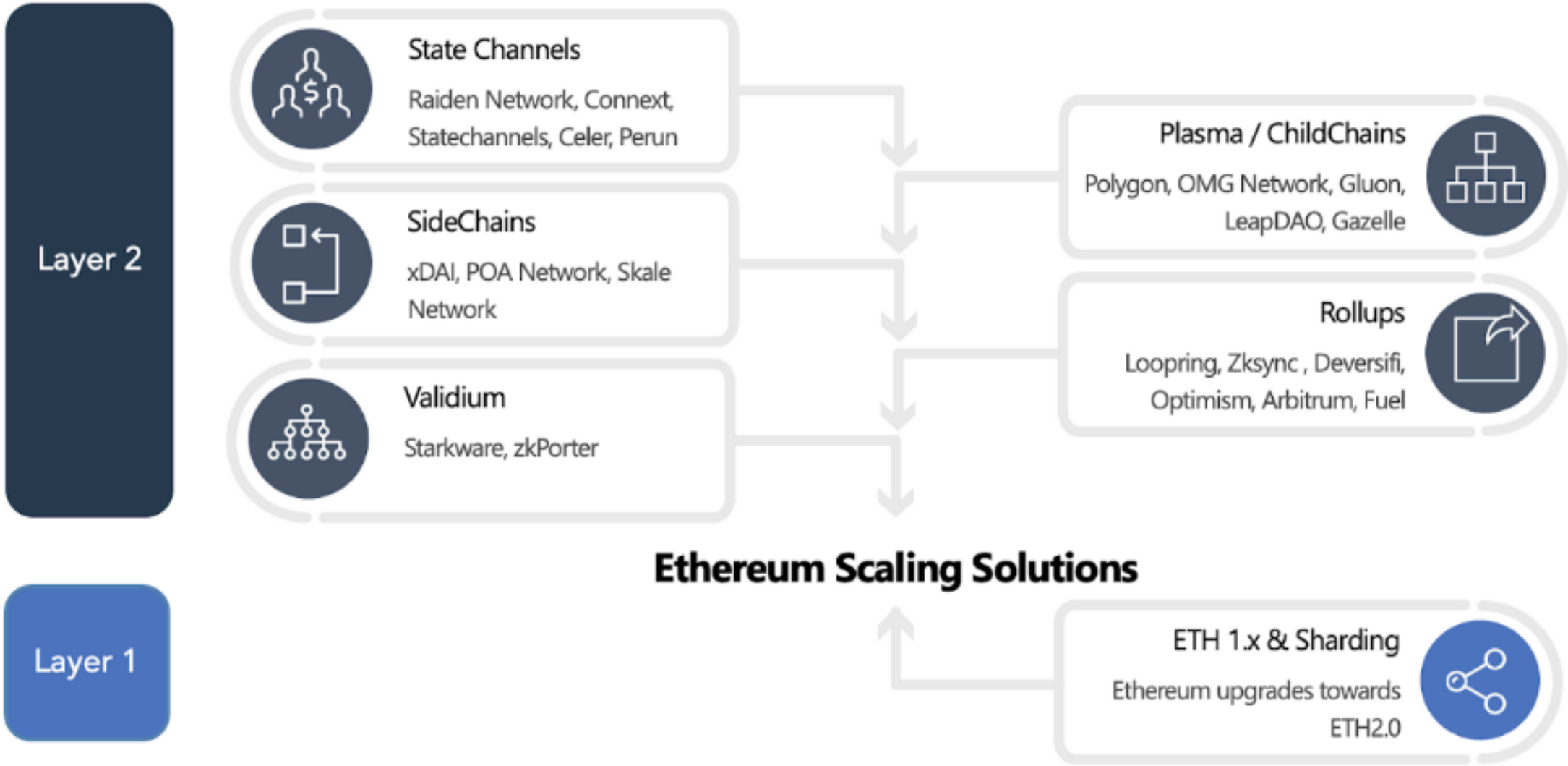
- Exchange chain (X-chain) – blockchain for creating and transacting Avalanche assets
- Contract chain (C-chain) – blockchain for building new dApps
- Platform chain (P-chain) – blockchain for creating new layers
- Proof of stake, but allows for many more validators

Advantages

- Less congestion on the network – can process up to 6,500 transactions per second
- Low gas fees – fees are the network are used to
- More interoperability – much like Polkadot, it has multiple chains that are all interoperable with AVAX

https://cointelegraph.com/news/what-is-avalanche-network-avax-and-how-does-it-work, https://medium.com/avalancheavax/avalanche-consensus-101-99c68a3e3159

Ethereum Scaling Solutions by Type (from Messari)



Distinguishing Rollups from Sidechains

- Rollups provide are more complete solution vs. Plasma chains or state channels, which do not support application development, and better security than sidechains.
- Rollups execute transactions off-chain and write cryptographic proofs of validity to the chain when complete, which frees up resources on the main chain and reduces congestion and fees.
- The scalability of rollups can be magnified by ETH 2.0; because rollups only need the data layer to be scaled, they can be used in ETH 2.0 Phase 1.

The main difference between rollups and sidechains is that the rollups retain the same security as the main chain, so there are more resources required, whereas a sidechain exists through a bridge between the main chain and the sidechain so that assets on the latter can be moved back to the former.

*Optimistic rollups (in contrast to zero knowledge rollups) assume the transaction is valid by default.

https://medium.com/coinmonks/2021-review-layer-1s-layer-2-scaling-solutions-the-future-of-eth-2-0-6d4bab27f769, https://medium.com/geekculture/understanding-layer-1-and-layer-2-blockchain-scaling-solutions-55d37bb5998e

Polygon

Polygon's architecture can best be defined as a four-layer system composed of the Ethereum layer, security layer, Polygon networks layer, and execution layer.

- Ethereum layer is a set of smart contracts implemented on Ethereum, handling transaction finality, staking, and communication between Ethereum and the various Polygon chains.
- Security layer runs side by side with Ethereum and provides a "validators as a service" role which allows chains to benefit from an additional layer of security. Both the Ethereum and Security layers are optional.
- Polygon networks layer is the ecosystem of blockchain networks built on Polygon. Each of these has its own community and is responsible for handling local consensus and producing blocks.
- Execution layer is Polygon's Ethereum Virtual Machine (EVM) used for executing smart contracts.

Interoperable bridge for conducting Ethereum-based transactions

- Validators verify new transactions and add them to the blockchain, receiving a cut of fees and the created MATIC. Becoming a validator is a commitment that requires running a full-time node (or computer) and staking your own MATIC. If you make an error or act maliciously, you could lose some staked MATIC!
- Delegators stake their MATIC indirectly via a trusted validator. This is a much lower-commitment version of staking. But it still requires research — if the validator you pick acts maliciously or makes errors you could lose some or all of your staked MATIC!

https://www.coinbase.com/learn/crypto-basics/what-is-polygon, https://decrypt.co/resources/what-is-polygon-matic-and-why-it-matters-for-ethereum

Olympus DAO

- Stablecoins have emerged as a popular mechanism for peer to peer transfers without third parties
- However, maintaining collateral on them is an inefficient use of capital – the price of ETH or BTC is volatile, so you have to maintain a lot of it to have sufficient margin at any point in time
- While one approach is to securitize certain real world assets (e.g., what Robinland is doing), another approach that Olympus DAO took is to create a new asset that can eventually function as a reserve currency – that is, a basket of decentralized asset where the price can float above the value of any particular asset that is backing it
- The protocol must hold at least 1 DAI to mint every new OHM entering circulation, and it expands its supply as it accrues more capital to back new issuance. The increases of the supply are distributed to those supporting the project by staking OHM. Every eight hours — a period known as an “epoch” — the protocol awards a percentage of the amount staked, which is automatically added to the staker’s position
- They try to avoid yield farming by offering holders of OHM tokens a discount, and earn yield for staking it
- But, the token economics were a little too fishy and Olympus DAO ended up minting way more tokens than there was demand, so they kept offering high APYs and demand did not keep up – eventually crashed

https://www.okx.com/academy/en/olympusdao-protocol-owned-liquidity-defi-reserve-currency-ohm

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Questions?

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