UNIVERSITY of NICOSIA

Session 5

Blockchain and Tokenization

BLOC 515: Blockchain and entrepreneurship management

Session objectives

- Explain the disruptive nature of tokenization
- To understand the differences of security and utility tokens
- Learn how to create the Tokenomics of an organization in order to raise money from the market

Session outline

1. Smart contracts
2. Tokenisation examples
3. Security and utility tokens
4. Tokenomics
5. Practical example
6. Conclusions

1. Smart Contracts

Smart contracts

Read below and discuss the importance of smart contracts

"In the ancient Greek classic, The Odyssey, the hero orders his men to lash him to the mast of his ship, so that he cannot respond to the beautiful songs of the Sirens. He radically disempowers himself ahead of time, because he knows he will not be trustworthy under the Sirens' enchantment.

A similar strategy lies at the heart of blockchain's capability to decentralize trust."

https://www.legalanalytics.law.cuhk.edu.hk/post/the-siren-song-algorithmic-governance-by-blockchain
https://schoolworkhelper.net/odyssey-vs-odysseus/

Smart contracts

- *“Smart contract agreements can be trusted, because no one retains the power to break or alter them.”*

https://www.legalanalytics.law.cuhk.edu.hk/post/the-siren-song-algorithmic-governance-by-blockchain

Smart contracts - benefits

Autonomy

1

You're the one making the agreement; there's no need to rely on a broker or lawyer

Trust

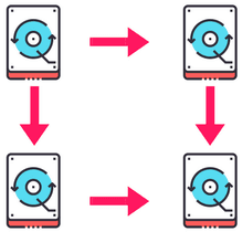
2

Your documents are encrypted on a shared ledger

Backup

3

On the blockchain,Your documents are duplicated many times over



Savings

4

Smart contracts save you money since they knock out the presence of an intermediary

Accuracy

5

Smart contracts are not only faster and cheaper but also avoid the errors that come from manually filling out heaps of forms.

www.Blockgeeks.com

Blockgeeks

Smart contracts

Question:

Company A offers a scholarship that covers

- Tuition fees (e.g. 4,500 euro per semester)
- Accommodation (e.g. 600 euro per month)
- Personal expenses (e.g. 1000 euro per month)

- How can we ensure that the student makes appropriate use of the scholarship?

Smart contracts – in practice

Identify Agreement

– multiple parties indentify a cooperative opportunity and desired outcomes

– agreements potentially in scope could include business processes, asset swaps, transferal of rights and more

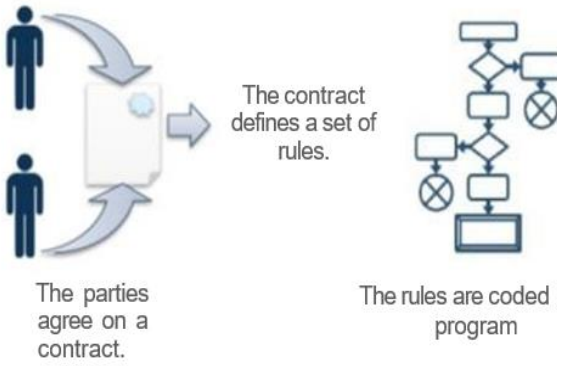
Set Conditions

– smart contracts could be initiated by the parties themselves or by satisfaction of certain conditions like financial market indices, natural disasters or event via GPS location

– temporal conditions could initiate smart contracts on holidays, birthdays and religious events

Code the Business Logic

– a computer program is written in a way that the arrangement will automatically perform when the conditional parameters are met



Encryption & Blockhain Technology

– encryption provides secure authentication and verification of messaging between the parties relating to the smart contract

Execution & Processing

– in a blockchain iteration, when consensus is reached on authentication and verification, the smart contract is written to a block

– the code is executed, and the outcomes are memorialized for compliance and verified

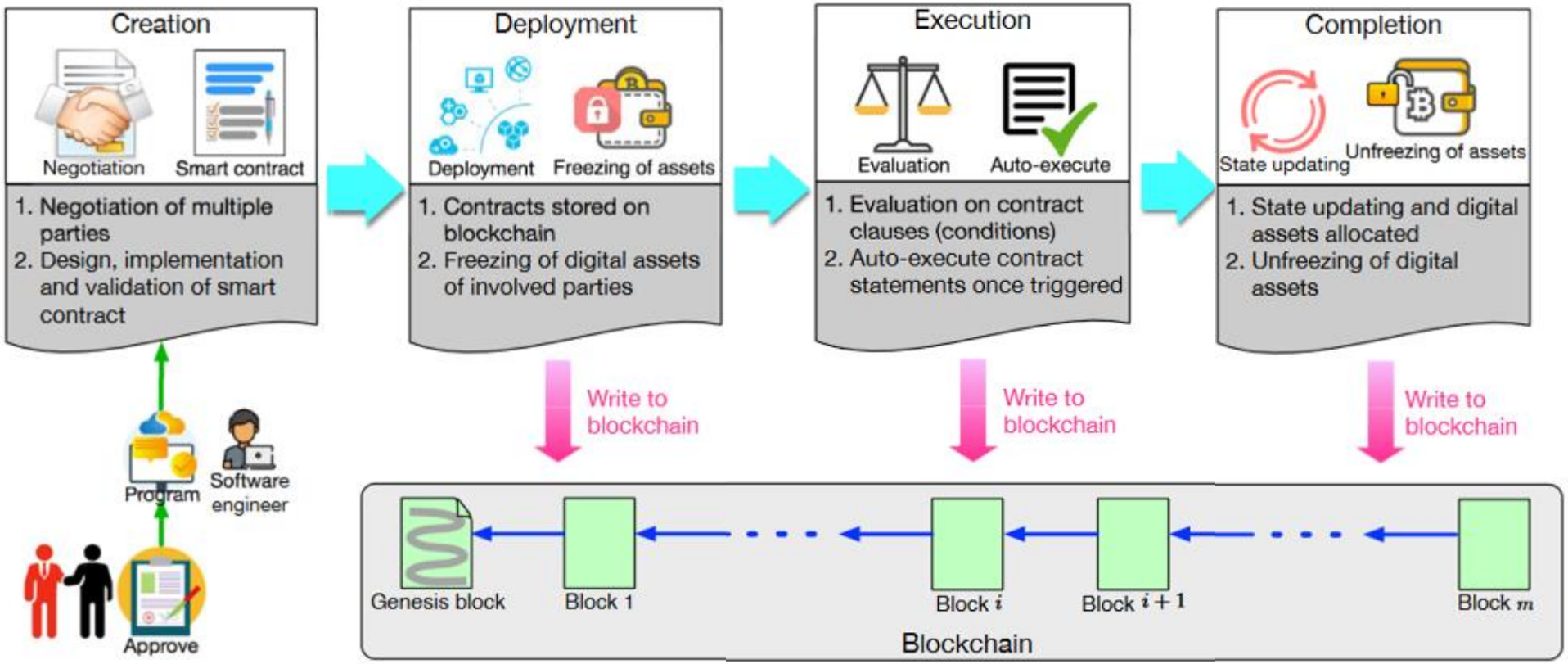
Network Updates

– after performance of the smart contract, all computers in the network update their ledgers to reflect the new state

– once the record is verified and posted to the blockchain, it cannot be altered, it is append only

Adapted from: the-blockchain.com

Smart contract - Lifecycle



Source: https://arxiv.org/pdf/1912.10370.pdf

2. Tokenization examples

Example 1 - tokenising real estate

- Today's markets are slow, expensive and monolithic
- Property **owners** cannot monetize *part* of their property
- Property **investors** need large amounts of capital
- Real estate **markets** are inefficient and illiquid

Example 1 - tokenising real estate

Platforms/Exchanges that bring together property owners and investors

- Each property is split into blockchain-based tokens that securely represent ownership of a fraction of the asset
- **Owners** enlist their property or part of it and monetize it by selling tokens
- **Investors** acquire tokens and receive rental income while they hold them; they will also benefit from asset appreciation
- The platform operates as property manager; income and expenses are securely & transparently recorded & distributed on the blockchain

Example 1 - tokenising real estate

Benefits:

- Owners can sell ownership rights to arbitrary percentages of their property.
- Investors can acquire property ownership rights anywhere in the world, with minimum capital and expenses.
- Liquid and efficient markets for global real estate will be created.

- **Question: Will blockchain do to real estate investing what the Internet did to stock investing?**

Example 1 - tokenising real estate

- Olivia owns a property in Cyprus valued at €100,000
  - Tokenizes the property into 100,000 tokens, each valued at €1
  - Olivia needs liquidity of €10,000, so she enlists 10,000 tokens in the platform, effectively putting 10% of the property for sale

- Sam wants to invest in Cyprus properties, but his total capital is only €5,000
  - Obviously, he cannot buy *any* property in Cyprus
  - Acquires 5,000 tokens of Olivia's property (or may even diversify across properties)
  - A smart contract is developed for this transaction
  - Since he effectively owns 5% of the property, Sam receives 5% of the property's rental income as long as he holds the tokens
  - When the property's value has risen to €120,000 Sam may decide to sell half his stake for a profit (i.e. 2,500 tokens at €1.2 each) and still retains ownership of 2.5% of the property

Example 2 - tokenizing future income streams

People need funding at their early or middle career stages to pursue their goals

Athletes need support for training, equipment, traveling, etc.

Artists need to produce/promote their work, go on tour, etc.

Students need to finance their studies

Financing options are limited:

Loans (Debt)

Example 2 - tokenizing future income streams

What if talent could issue *equity*?

Platforms that tokenize career prospects (future incomes) using blockchain

Enable investors to fund talent, investing on their future achievements and income

Enable talent to build up careers and/or insure against future risks

Markets that bring together investors and talent can be created

Example 2 - tokenizing future income streams

How would this work?

- Alice is a promising tennis player at her early career stages
- She needs $100,000 for equipment, training, traveling to tennis tournaments
- She signs up at the platform, builds her profile, signs a smart contract with the platform; 100,000 tokens (each valued at $1) are issued
- Tokens are sold to investors. Alice receives $100K, while investors get the rights to 30% of her future income for a fixed period
- Alice invests the funds on professional training and participation in events around the world
- After a few years, Alice has developed into a professional player earning $300,000 a year
- Of this income, 30% (i.e. $30K annually) are distributed to token holders via the blockchain platform
- Investors receive income (dividends) and can sell tokens, which will fluctuate in value according to income/maturity

3. Security and Utility tokens

Security tokens

Select the correct answer(s) about security tokens?

A. They are digital assets that represent transferred ownership rights or asset value to a blockchain token.

B. The Securities and Exchange Commission must approve security tokens.

C. A security token is created using tokenization

D. They give their holder special access to a product or service

Utility Tokens

Factors indicating utility nature

- Digital access to a current or prospective good or service
- Digital access to a network of the issuer of the token
- Non-financial purpose, no expectation of return related to the operation of a digital platform
- Token is backed by a project
- Offer their acquirers some sort of utility or consumption rights

- **Question: Can you think of a utility token example?**

Utility Tokens

Example - computer game

- Users can buy tokens
- Users can use them within the game (e.g. buy a new tool, weapon, object, unlock specific features, buy resources, etc)
- Rewards: The game can give rewards to players based on their achievements (e.g. mission accomplished)
- Airdrops etc

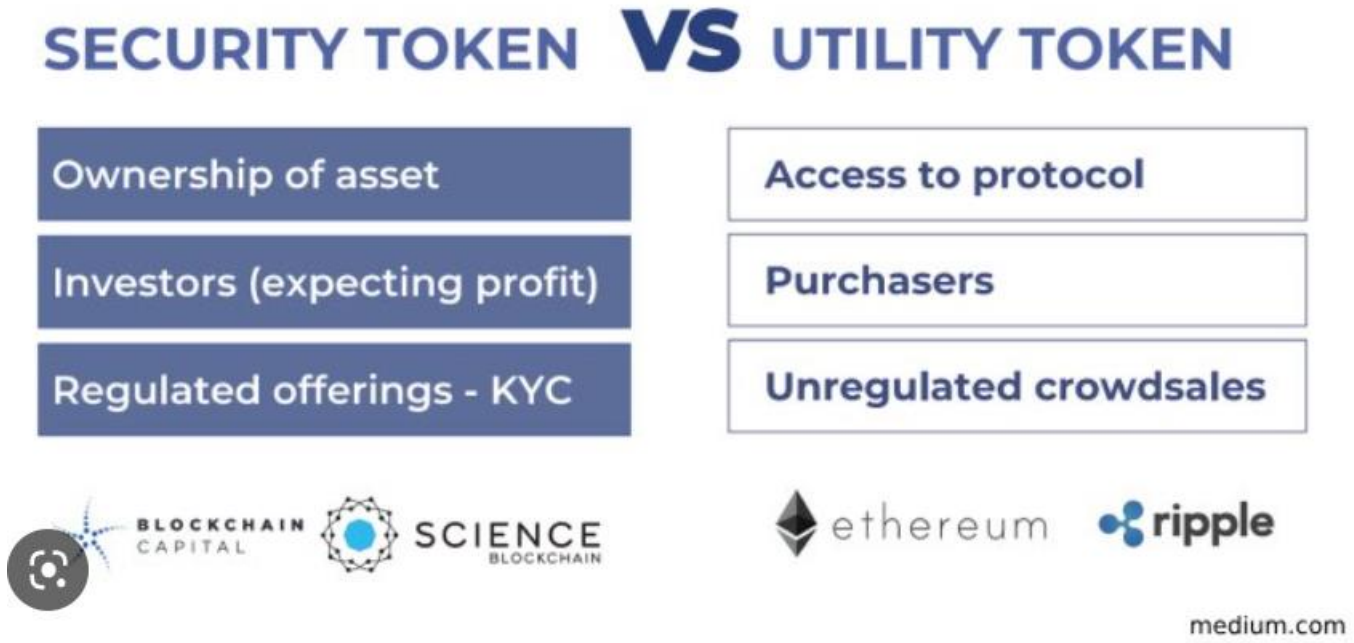
Security Tokens

Factors indicating security nature

- Profit rights attached to tokens (like dividends, standard income)
- Ownership or control rights BUT minimum or non-binding control rights (e.g., vote in which ICOs the entity will invest in and no other issues for the future of the entity) might not be an indication of a security token
- Similar function to shares or bonds (e.g., token represents money owed to the token-holder)
- Tradability and negotiability (requirement of a transferable security). If listed on an exchange→ indicates tradability and negotiability, but the UK regulator implements a lower threshold: security tokens do not have to be listed to qualify as security tokens. It is enough that they can be transferred from one person to another

Security Tokens

- Provide holders with economic rights and they are subject to regulation under securities laws
- Provide holders with partial equity-ownership in the issuing entity, dividend rights, revenue rights or rights to a part of the transaction costs on the network or (fractional) ownership of real-assets



5. Tokenomics

Tokenomics

Key parameters

- Total supply: The total amount of tokens to be issued
- Valuation: refers to the tokens to be sold = supply * token price
- Hard cap: the highest amount of money a project plans to raise for its development needs.
- Soft cap: the minimum amount of funds required to continue working on the project
- Categories of token use (e.g. sales subcategories team, advisors, marketing, etc)
- Sales subcategories: Pre-seed, seed, private and public sales
- TGE = Token Generation Event
- Vesting = Lock up specific % of tokens
- Vesting period,
- Vesting schedule
- Token circulation: the number of tokens that are currently available the market (to buy or sell)
- Token allocation chart (should be included in the whitepaper)
- Token circulation chart (should be included in the whitepaper)

Tokenomics

Key parameters

- Total supply: The total amount of tokens to be issued
- Valuation: refers to the tokens to be sold = supply * token price
- Hard cap: the highest amount of money a project plans to raise for its development needs.
- Soft cap: the minimum amount of funds required to continue working on the project

Tokenomics

Key parameters

Categories of token use

- Sales subcategories: Pre-seed, seed, private and public sales
- Team,
- Advisors,
- Marketing,
- Staking
- Liquidity
- Treasury
- Airdrops
- etc

Tokenomics

Key parameters

- TGE = Token Generation Event
- Vesting = Locking up specific % of tokens
- Vesting period (good practice up to 30 months)
- Vesting schedule

Tokenomics

Key parameters

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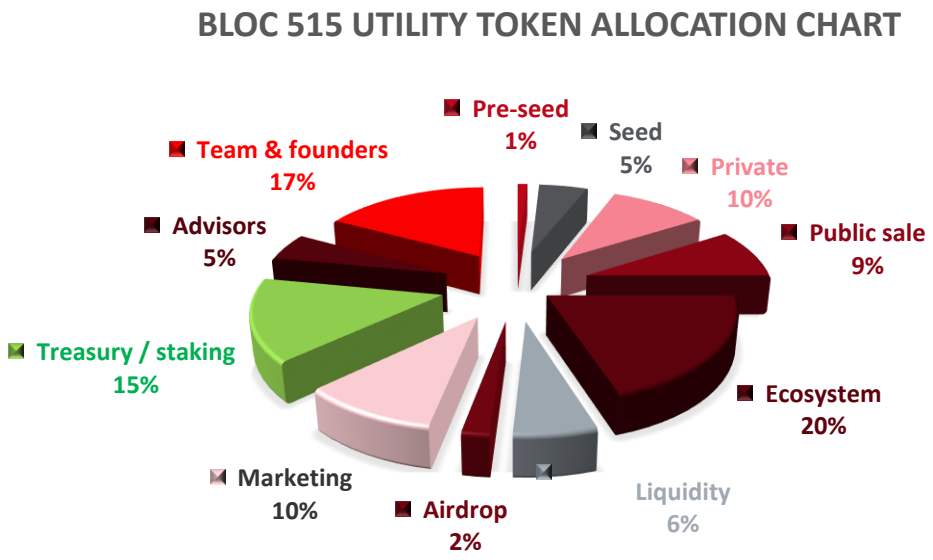
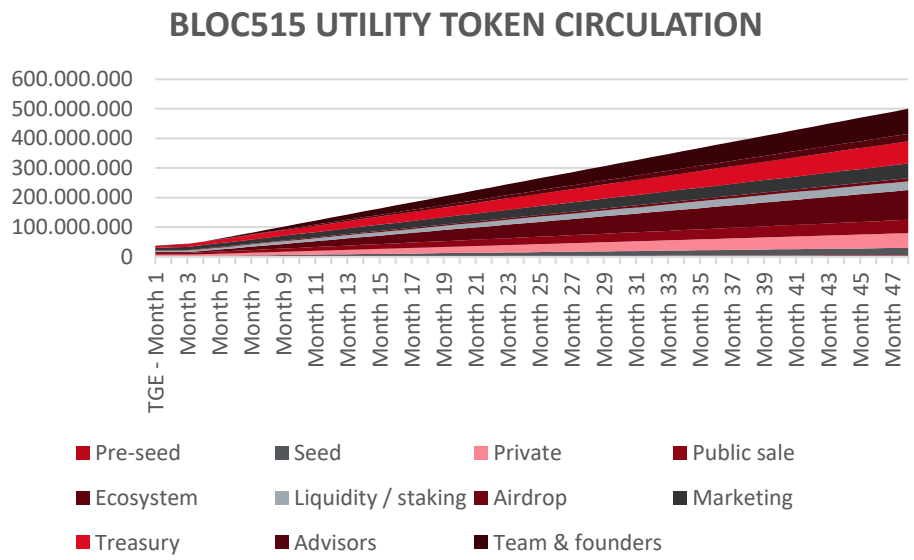




Tokenomics

Key parameters

- Burn mechanism (reduce overall supply → (increase demand, address issues with inflation, price etc)
- Buyback: the project buys its token from the market with its funds and locks them in a wallet;

Tokenomics

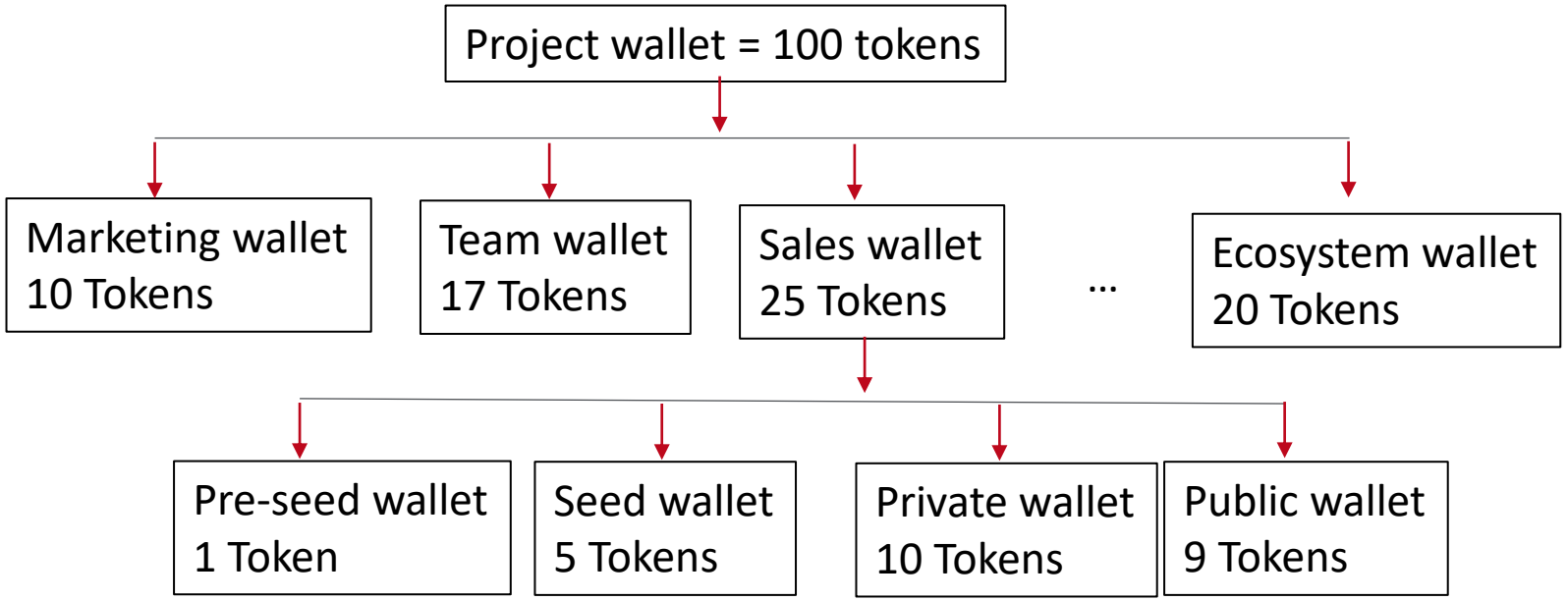
Legal documents/contracts are required to sell the tokens

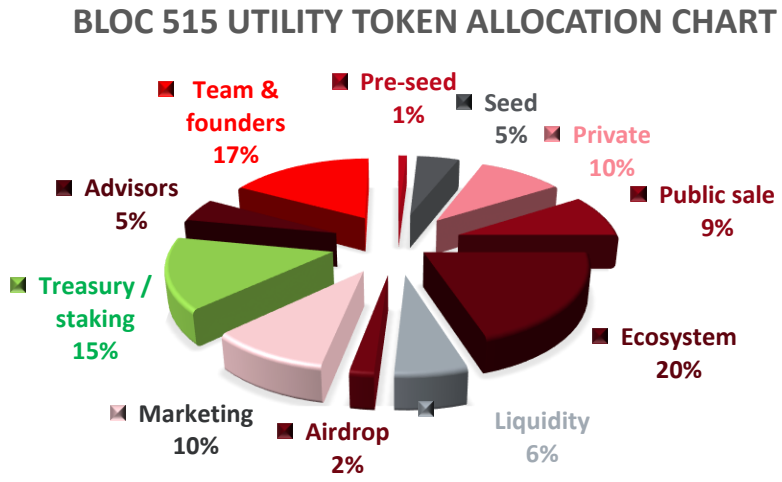
- SAFT: Simple Agreement for Future Tokens
- SAFE: Simple Agreement for Future Equity

Tokenomics

Tokens issuance & wallets

- Example: Issue 100 tokens for our project
- Smart contract to issue tokens (TGE) and put them in the wallet





Tokenomics

Exercise

- A practical exercise will take place during the live session
- The purpose of the exercise is to explain how to create the Tokenomics for a blockchain startup

4. Governance

Governance

Governance tokens and governance models

- What is a governance token?
- What is a governance model?

- **Please provide examples**

Governance Token

Example: online game

- **Governance rights** – holding **x tokens** will give players voting rights in order to decide the future development of the project .

Governance Structure: Three entities one goal

Entities

- Governance board
- Technical committee
- Community

Governance entities and roles – Governance board

Example

Governance board

- Fixed odd number of seats
- Can be extended only with board decision (80% majority); But it should remain odd
- Let's start with 7 seats. In the future it can be extended to 9, 11, 13 etc.

Governance board role

- Propose sensible referenda,
- Cancel uncontroversially dangerous or malicious referenda,
- Elect the technical committee

Governance entities and roles – Governance board seats

7 seats model-I

- Co-founders: 3 seats
- Employees: 1 seat
- Advisors: 1 seat
- Community: 2 seats

7 seats model-II

- Top 5 governance token holders: 5 seats
- Community: 2 seats

7 seats model-III

- All 7 members are elected by the community

Discuss the above models

Governance entities and roles – Becoming a board member

- Community members can nominate other members to be elected as member of the board
- Minimum requirement: members to hold at least x tokens (x >= 1, 1k, 10k etc)
- Board members term: 1 year
- Voting process: rotating approval vote

Governance entities and roles – Becoming a board member

- Rotating approval vote example – board members are elected in rolling elections

Round 1	Candidates				
Token holders	**A**	**B**	**C**	**D**	**E**
Maria	x				
John		x			
Hasan			x		
Ahmed	x				
Bill	x				
Carmen		X			
Hellen					x
Total	**3**	2	1	0	1

Round 2	Candidates				
Token holders		**B**	**C**	**D**	**E**
Maria		x			
John		x			
Hasan			x		
Ahmed				x	
Bill				X	
Carmen				x	
Hellen					x
Total		2	1	**3**	1

Elections' outcome

- Candidate A is elected on Round 1
- Candidate D is elected on Round 2

Governance entities and roles

Board role

- Propose sensible referenda,
- Veto / cancel uncontroversially dangerous or malicious referenda,
- Elect the technical committee.
- Fast-track referenda, in case of a technical emergency, it can be prioritized for public vote

Technical committee role

- Make proposals to the board
- Emergency referenda, which are fast-tracked for voting and implementation
- Veto referenda if a proposal in a referendum poses a security risk to the project, the TC can veto the referendum by making a recommendation to the board

Community role

- Nominate board members
- Vote for board members
- Create proposals (public referenda)
- Prioritize referenda (in case of more than 1)
- Vote on referenda

Governance entities and roles

- Submit a proposal (board, technical committee (TC), community)
- TC can submit a technical proposal to the board
- Only board can submit a technical proposal for voting
- Two queues: (a) community-submitted proposals (b) board-submitted proposals
- Voting cycle (e.g. 1 month)
- The proposal with the most votes during the voting cycle is sent for referendum
- Exception: emergency situation where the technical committee fast tracks a proposal

5. Conclusions

Conclusions

- Tokens are classified into different categories
- Security tokens are digital assets that represent ownership or other rights
- Security tokens transfer value from an asset or bundle of assets to a token
- Utility tokens allow their holders to access and perform specific actions on a blockchain network or decentralized application.
- Utility tokens are also used for fundraising (ICO)
- Before issuing a token, organizations need to understand Tokenomics and their various key parameters
- Governance tokens are useful for decision making
- Various governance models existing; organizations define their own based on their needs and the level of decentralization of their decision making process.

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Questions?

Contact Us:

Twitter: @Themistocleous6
Instructor's Email: themistocleous.m@unic.ac.cy
Course Support: digitalcurrency@unic.ac.cy
IT & live session support: dl.it@unic.ac.cy