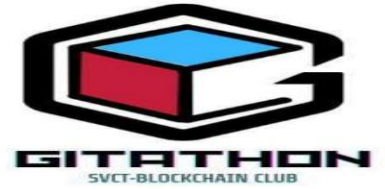




SRI VENKATESWARAA
COLLEGE OF TECHNOLOGY

Approved by AICTE, New Delhi
Affiliated to Anna University, Chennai
An Autonomous Institution
(Conferred Autonomous Status by UGC)



Ethereum Blockchain and Smart Contracts



Created By:
Mekala Vindhya
B.TECH AI&DS

TOPICS INCLUDED

- 1.INTRODUCTION
- 2.UNDERSTANDING BLOCK CHAIN
- 3.THE ETHEREUM ECOSYSTEM
- 4.SMART CONTRACTS
- 5.ETHEREUM VIRTUAL MACHINE (EVM)
- 6.DECENTRALIZED APPLICATION (D APPS)
- 7.ETHEREUM GAS AND TRANSACTION
- 8.CHALLENGES AND SCALABILITY
- 9.USE CASES OF ETHEREUM
10. SECURITY AND AUDITING
- 11.FUTURE OF ETHEREUM
- 12.CONCLUSION



- 
- Ethereum is a decentralized blockchain and development platform.
 - It allows developers to build and deploy applications and smart contracts.
 - Ethereum utilizes its native cryptocurrency, ether (ETH), for transactions and incentivizes network participants through proof-of-stake (PoS) validation

INTRODUCTION TO ETHEREUM

A blockchain is "a distributed database that maintains a continuously growing list of ordered records, called blocks."

UNDERSTANDING BLOCKCHAIN TECHNOLOGY

A Comprehensive Exploration



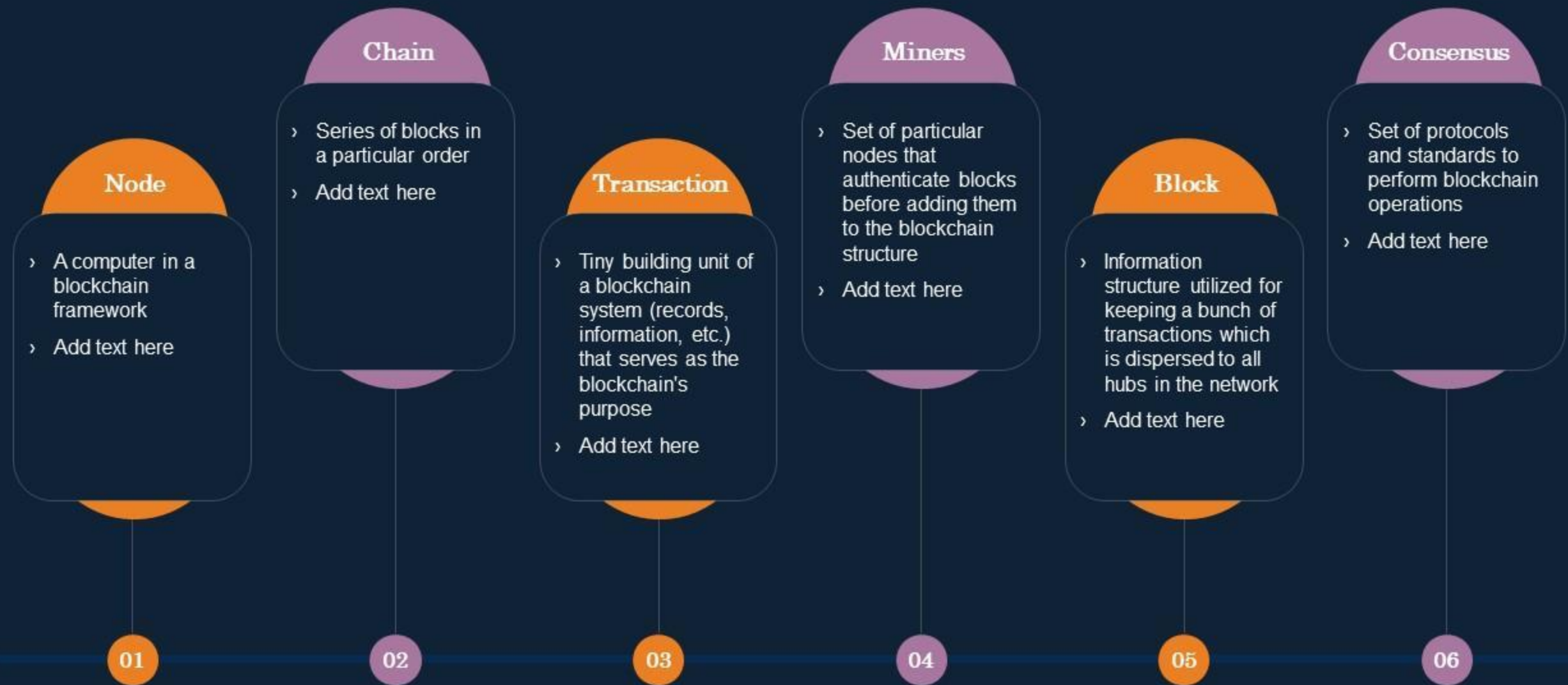
Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network

Ethereum's Upgrade Path



Core components of blockchain architecture

This slide represents the core components of the blockchain architecture, such as node, transaction, block, chain, miners, and consensus.



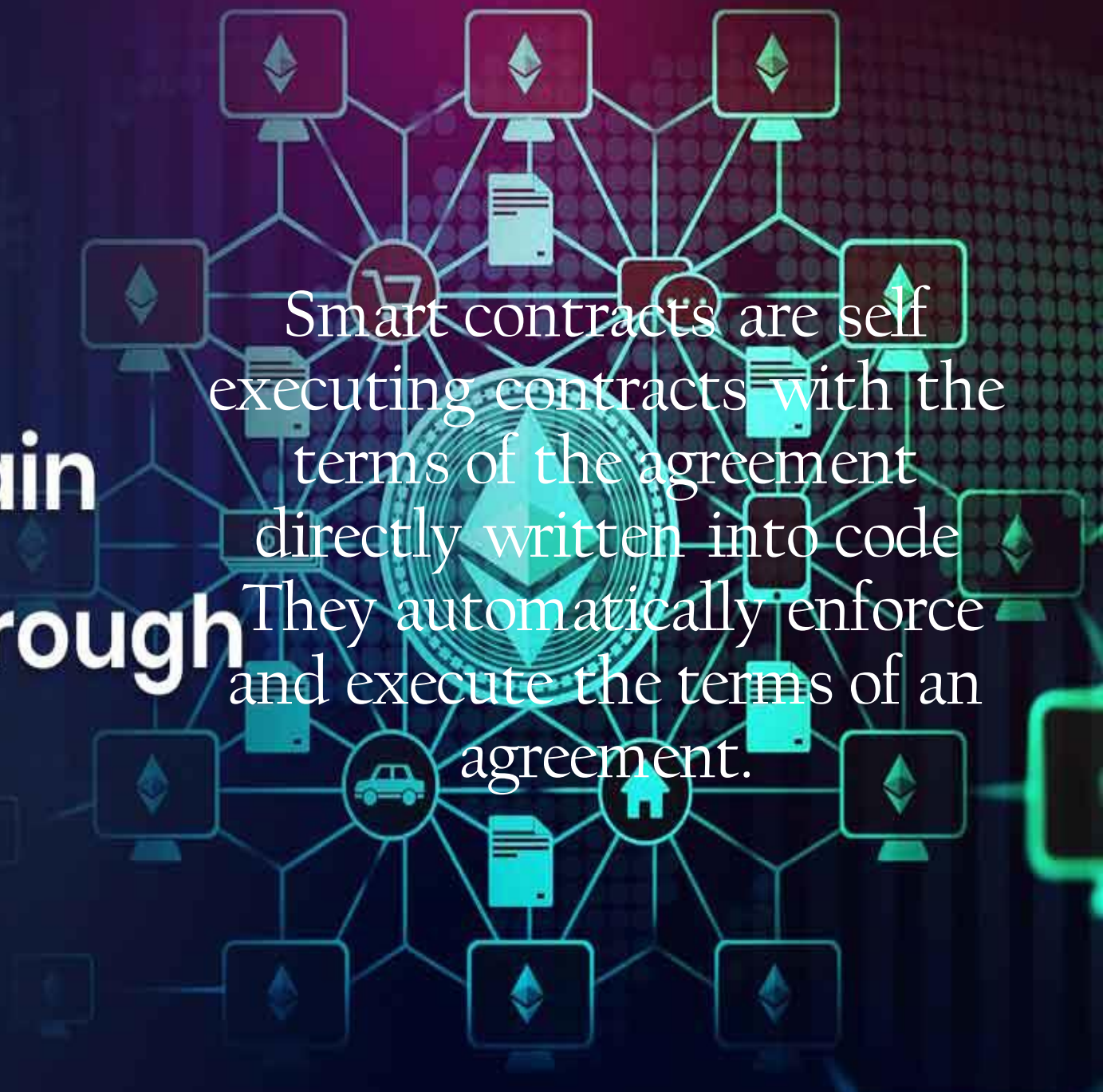
The Ethereum Ecosystem

The background of the slide features a dark blue gradient. In the upper right, there is a complex, glowing network of white lines and nodes, resembling a blockchain or a digital ecosystem. A bright orange and yellow light source is at the center of this network. In the lower right, a human hand is shown from the wrist up, reaching upwards towards the glowing network. The hand is lit from below, giving it a warm, golden glow. The overall composition suggests a connection between the physical world and the digital Ethereum ecosystem.

Ethereum is a decentralized platform that enables the creation of smart contracts and decentralized Application.(dApps).its native cryptocurrency is called ether.

Ethereum Blockchain Transformation Through Smart Contract

Smart contracts are self executing contracts with the terms of the agreement directly written into code. They automatically enforce and execute the terms of an agreement.



Advantages of Smart Contracts on Ethereum

01

Trust and Security

02

Efficiency and Cost Savings

03

Decentralization

04

Automation

05

Interoperability

06

Immutable Record Keeping

07


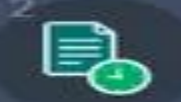
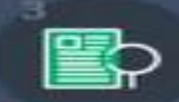
Programmable Money

08

Conditional Payments

The Future of Smart Contracts

1. Smart Contract Explained

- 
 - ✓ A contract is created between two parties
 - ✓ Both parties remain anonymous
 - ✓ The contract is stored on a public ledger
- 
 - ✓ Some triggering events are set i.e. deadlines
 - ✓ The contract self-executes as per written codes
- 
 - ✓ Regulators and users can analyze all the activities.
 - ✓ Predict market uncertainties and trends

2. How Do Smart Contracts Work?



3. Smart Contracts Benefits



4. Smart Contracts Use Cases?

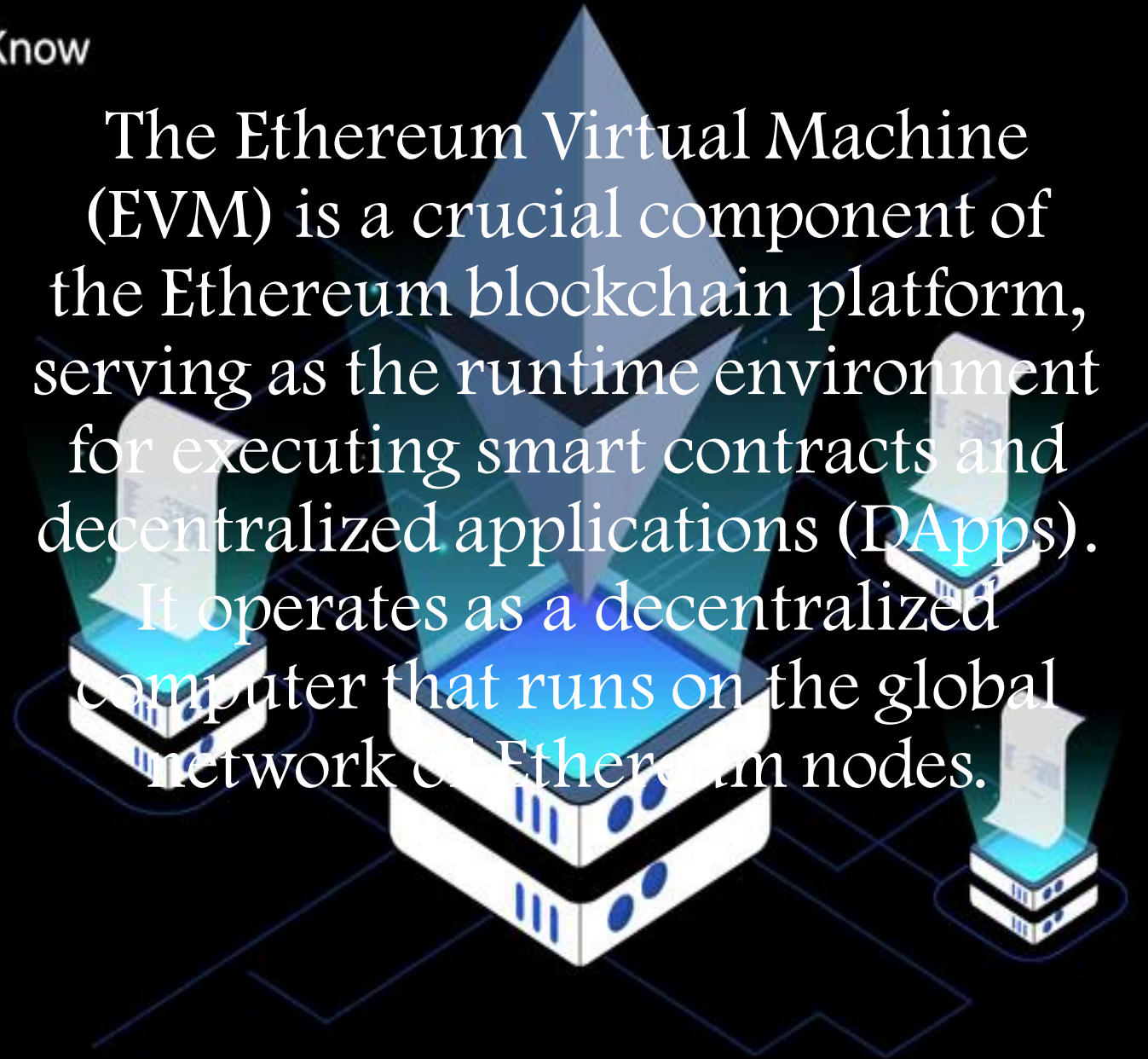


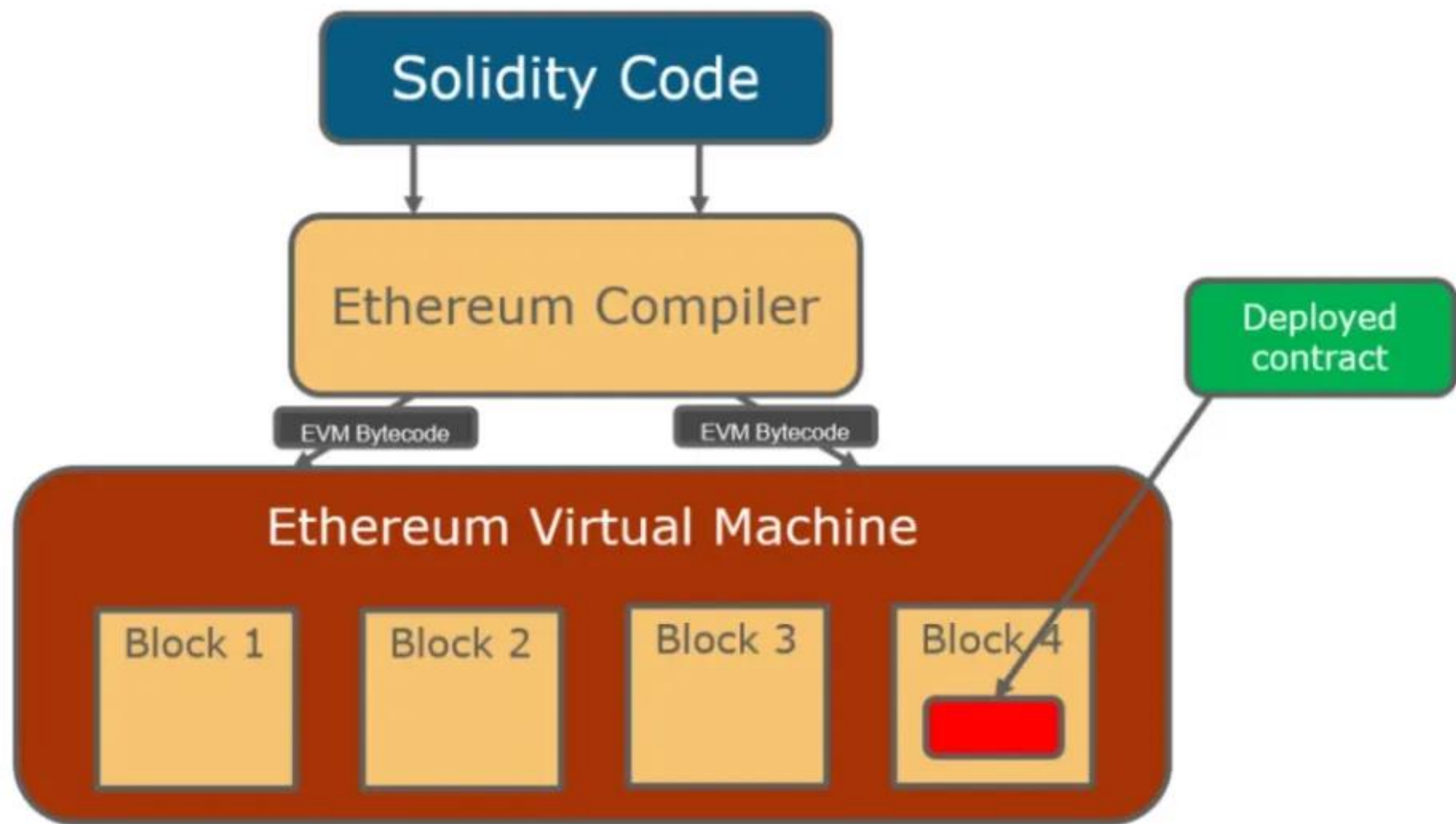
What is an EVM? | Benefits and All You Need to Know

Ethereum Virtual Machine

The Ethereum Virtual Machine (EVM) is a crucial component of the Ethereum blockchain platform, serving as the runtime environment for executing smart contracts and decentralized applications (DApps). It operates as a decentralized computer that runs on the global network of Ethereum nodes.

SecuX








101 Blockchains

DECENTRALIZED APPLICATION (DAPP)

A COMPLETE GUIDE

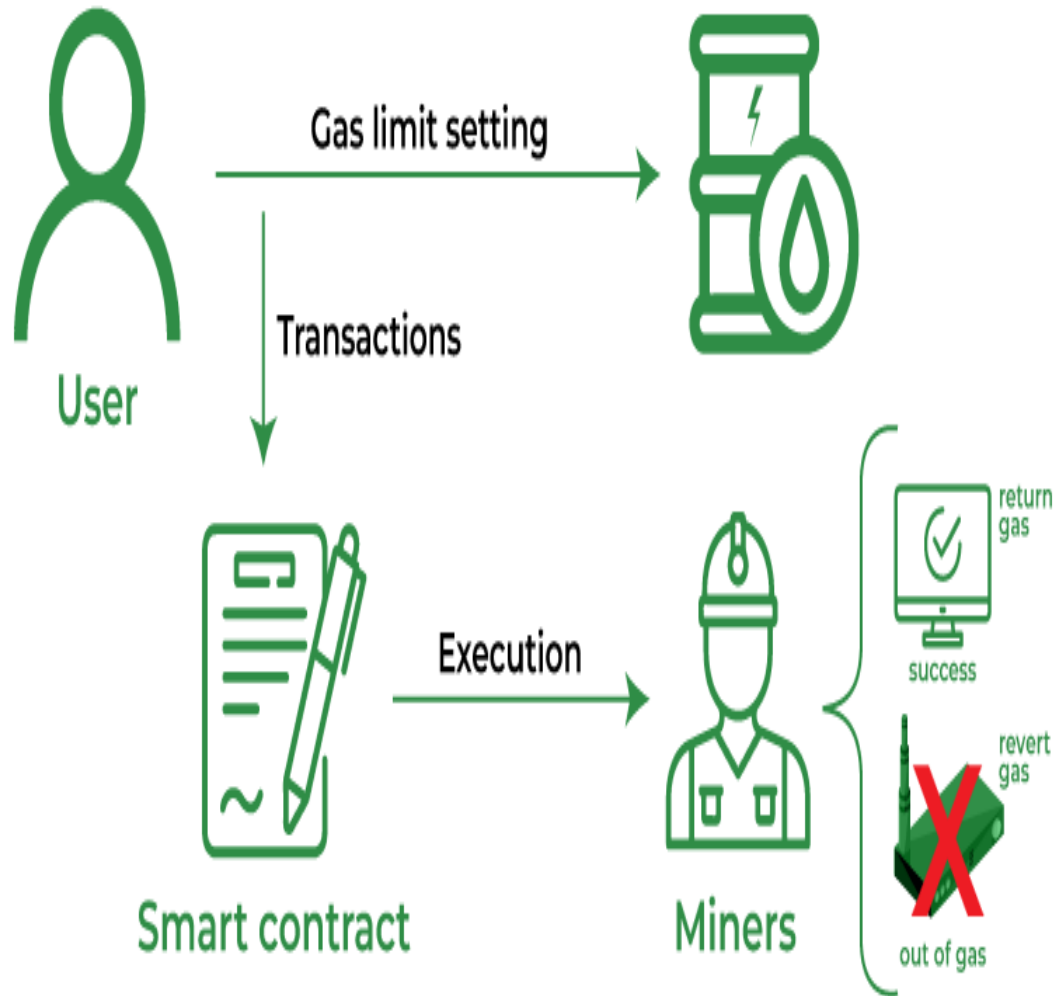


The background is a solid blue color. In the center, there is a large white gear. To its left is a smaller white gear. Several blue cubes are connected by thin white lines, forming a network. In the foreground, there is a stack of four blue server units. To the left of the servers, there is a stylized illustration of a person in a white suit and blue vest, holding a blue cube. To the right of the servers, there is a blue leafy branch. The text is overlaid on the left side of the image.

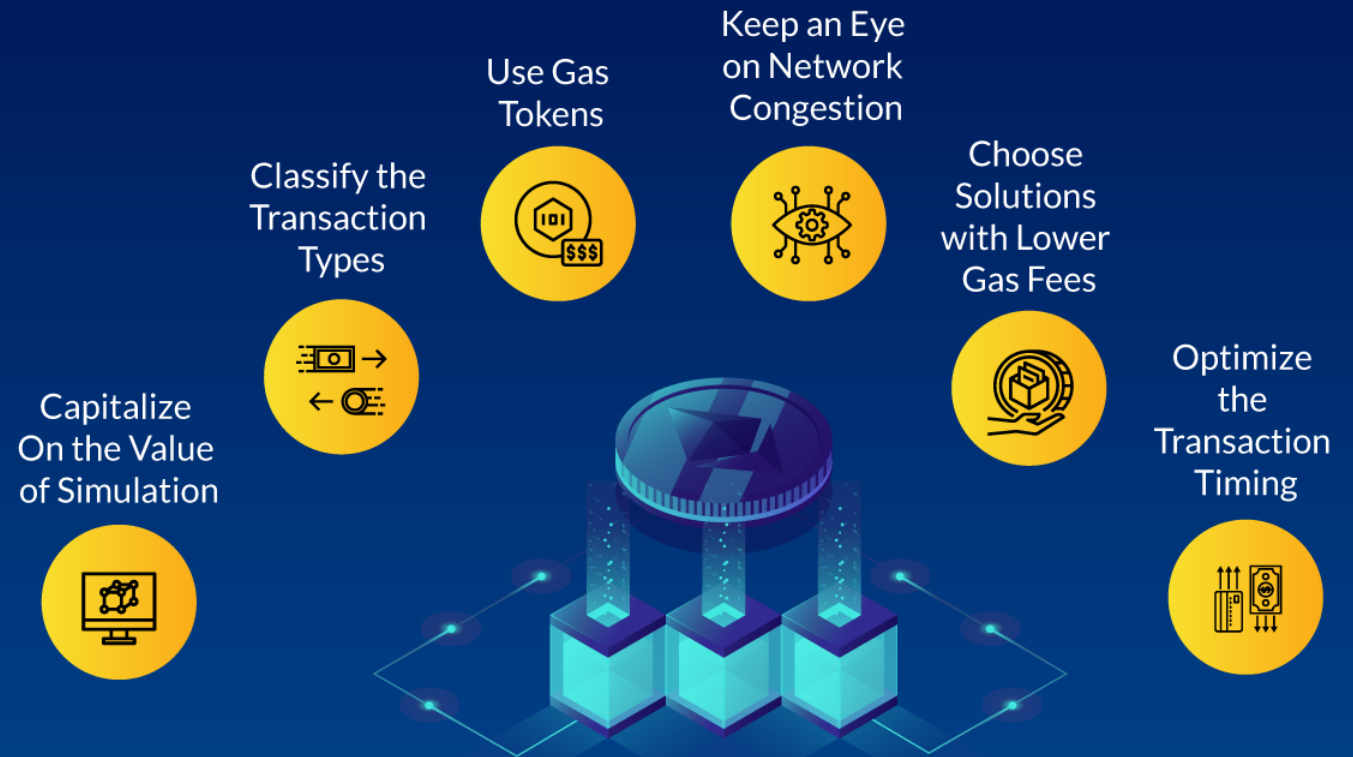
A on a single computer decentralized application (dapps) is a type of distributed open source software application that runs on a peer to peer (P2P) block chain network rather than on a single computer

WHAT ARE **DAPPS**

ETHEREUM GAS AND TRANSACTION



METHODS FOR REDUCING ETHEREUM GAS FEES



Blockchain Technology Implementation Process in Healthcare Organization



Businesses to Benefit From Ethereum and the Many Eth-based Scaling Solutions

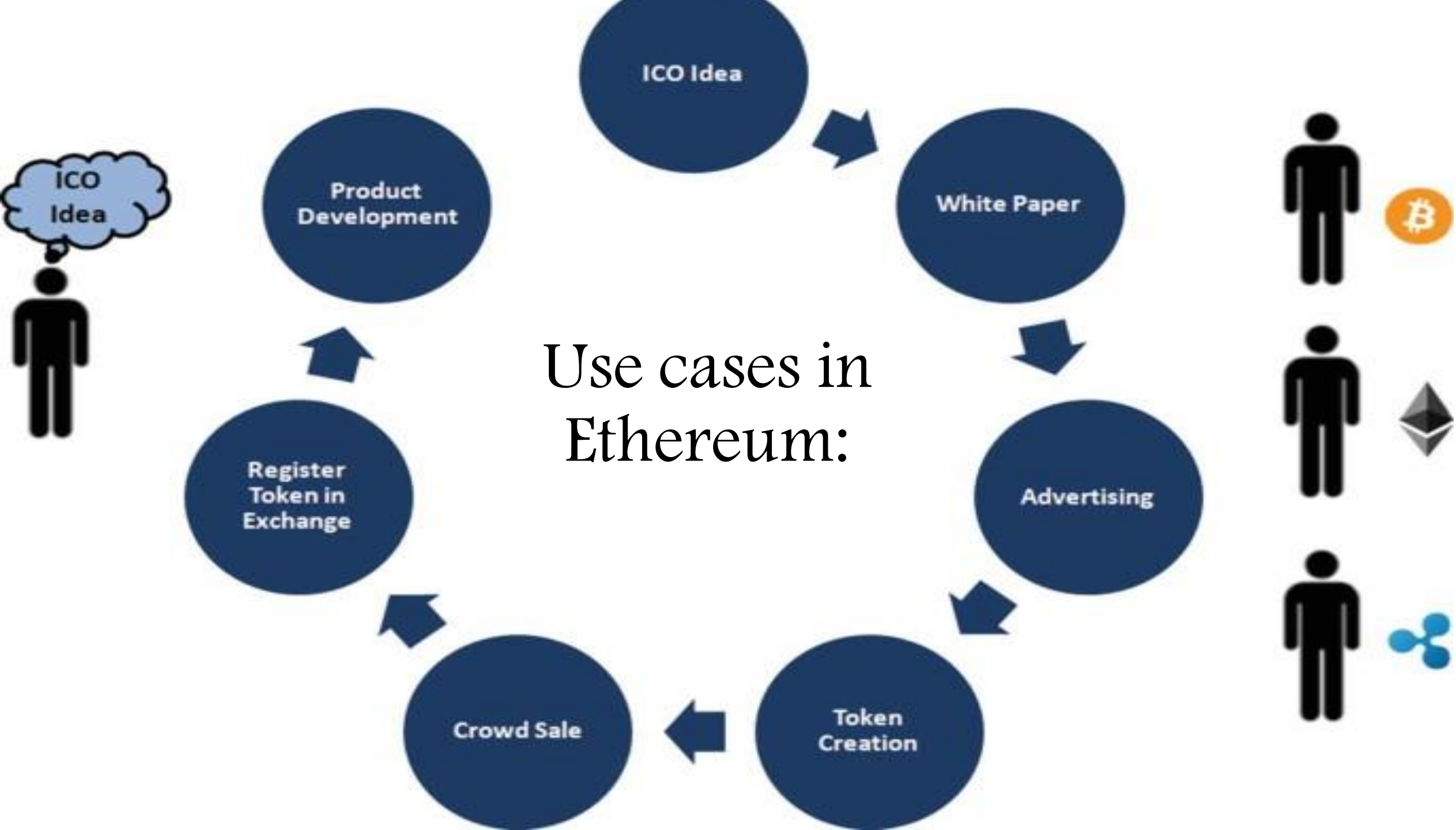
\$19B

Estimated in global business blockchain spending by 2024 (IDC)



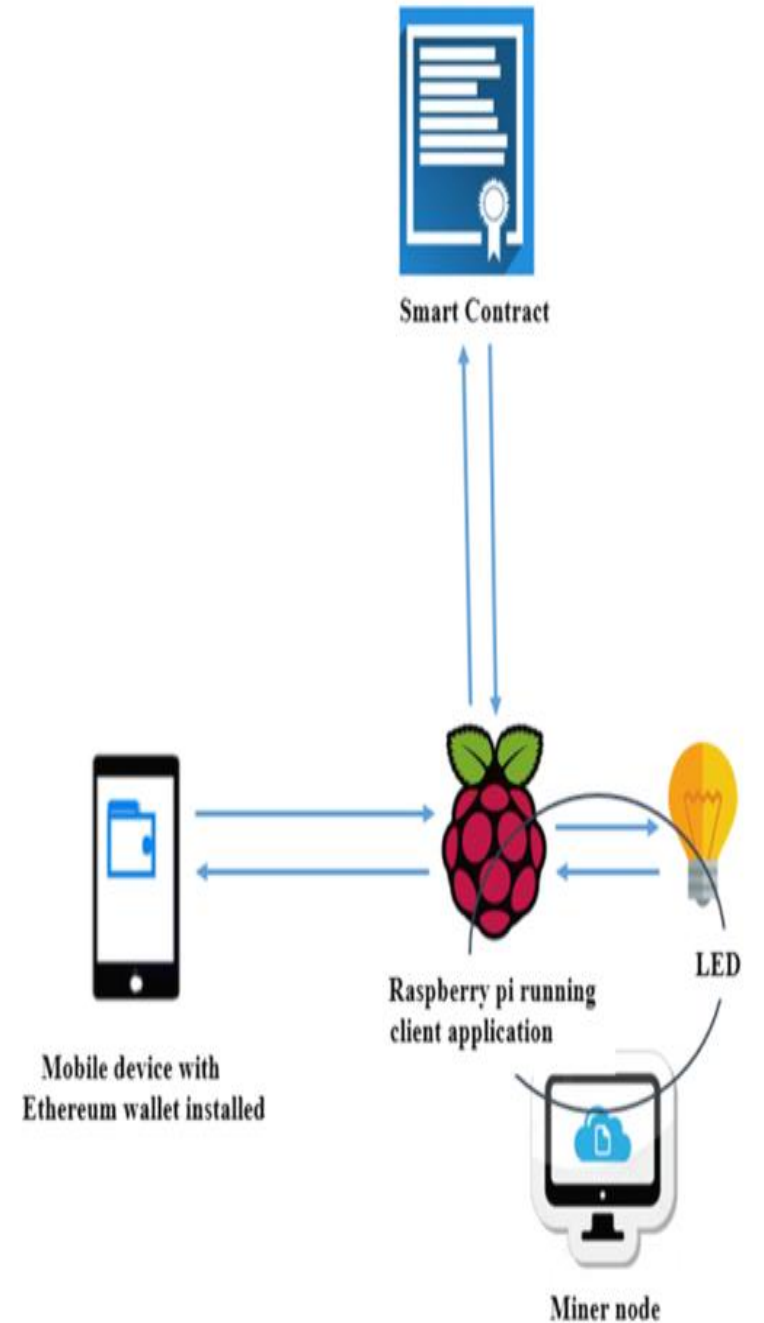
The EEA Mainnet Working Group, in collaboration with EEA members, helps businesses understand how Layer-2 scaling solutions fit different business needs

Layer-2 (L2) scaling solutions help solve businesses' public blockchain challenges today



Blockchain and the Internet of Things

Enhancing Connectivity and Security



ETHEREUM

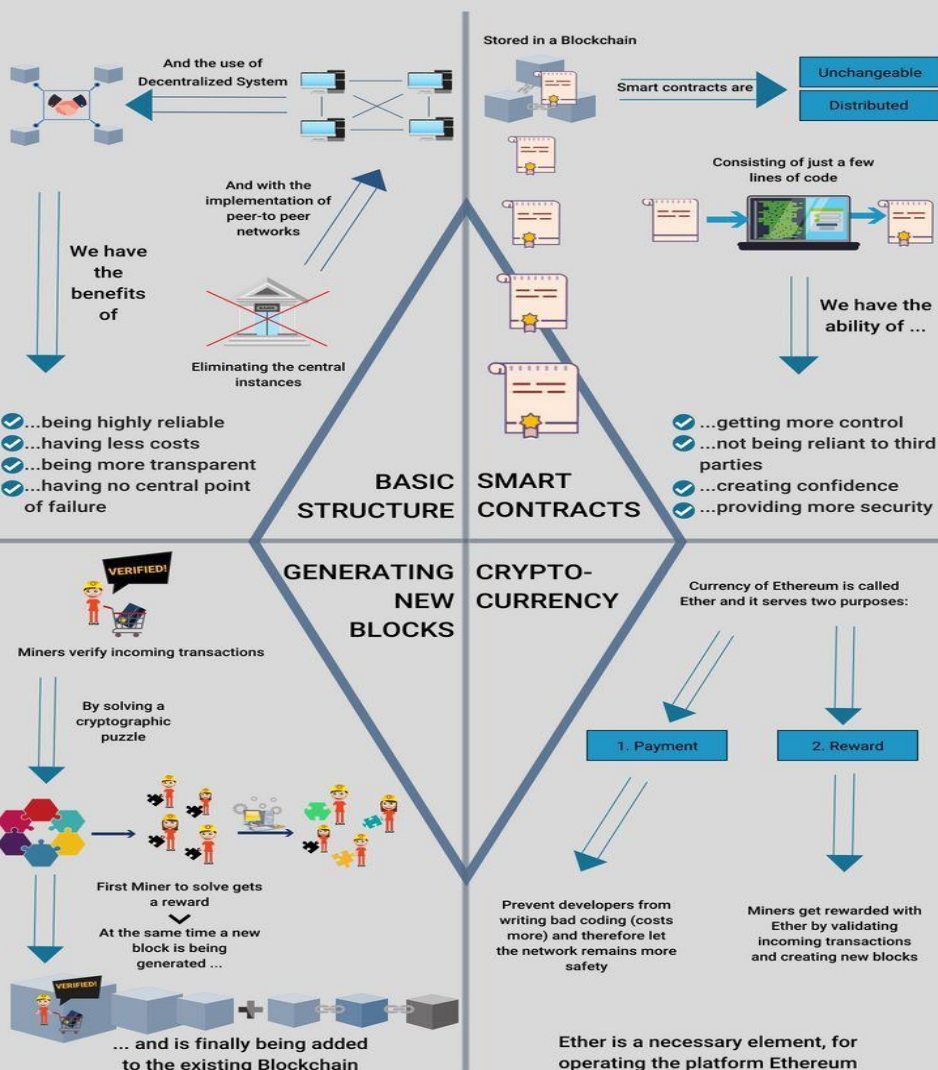
FOR BEGINNERS

The Ultimate Guide to Ethereum and Ethereum Mining
The Ultimate Guide to Mining, Trading, and Investing
in Cryptocurrency



PAMELA KINCAID

Everything you need to know about... Ethereum



A BEGINNER'S GUIDE TO



ETHEREUM

1 Introduction

Over the last few years, developers have begun using Bitcoin's underlying technology - the Blockchain - for creative new applications. Ethereum is a next-generation platform that allows anyone - both developers and consumers - to easily take advantage of decentralized networks and realize the benefits of blockchain technology

2 What are Decentralized Networks?

Decentralized networks redistribute functions and powers away from a central server, enabling peer-to-peer communication.

Advantages:

- ✓ No central point of failure
- ✓ Highly reliable
- ✓ Cost-effective

BitTorrent, used for file sharing, is an example of a decentralized network.

3 The Blockchain

Most networks function using a central authority to make final decisions. The blockchain, a type of decentralized network, is able to make agreements across the whole network, without any central authority



Bitcoin uses Blockchain technology to record and verify transactions without the need for a central bank.

4 Mist

Mist will be Ethereum's end user interface to bring blockchain technologies to non-technical users.

It will include a catalog for decentralized applications and an assortment of other tools.



Mist will work similar to app stores and browsers that consumers are already familiar with.

5 What Bitcoin does for payments, Ethereum does for anything that can be programmed



6 Ether

Ether is the native token of Ethereum, and serves two key purposes. First, by requiring applications to pay ether for every operation they perform, broken or malicious programs are kept from running out of control. Second, ether is given as a reward to those who contribute their resources to the decentralized network.



Ether: The "fuel" that runs the Ethereum network

7 What will Ethereum be used for?

Decentralizing Existing Services

Services that are traditionally centralized can be decentralized using Ethereum. This will lead to reduced costs and fees by connecting individuals directly and removing 3rd parties.

Imagine a service like Uber or eBay without a company in the middle collecting fees!

Bringing Science Fiction to Life

Using Ethereum, IBM and Samsung worked on a proof of concept where a washing machine could:

- ✓ order its own detergent when it runs out
- ✓ call its own repairman when it breaks down
- ✓ do the laundry when electricity is cheapest!



Unimagined Possibilities

The creators of the internet didn't anticipate social media or cloud computing. We have no way of predicting which breakthrough technologies will be born on the Ethereum blockchain



8 What is being built on Ethereum?

	Decentralized crowdfunding platform.
	Access protocol for smart property and the internet of Things.
	Project to increase the transparency and accountability of supply chains.
	Decentralized prediction market platform.

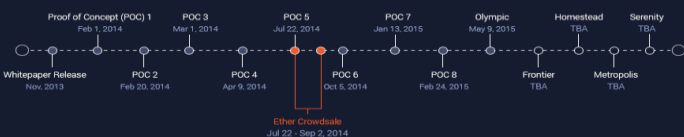
9 Funding the Vision

On July 22, 2014, the non-profit Ethereum Foundation launched a public crowdsale of Ether. The funds collected have helped carry out the development of the project. The sale lasted for 42 days and raised 31,591 BTC, or \$18,439,086, making it (at the time) the largest completed crowdsale project of all time.

Crowdsale Numbers

42 Days	31 Thousand BTC Collected	\$18 Million Equivalent
3rd Largest Crowdfunded Project in History (current)		9 Thousand Participants

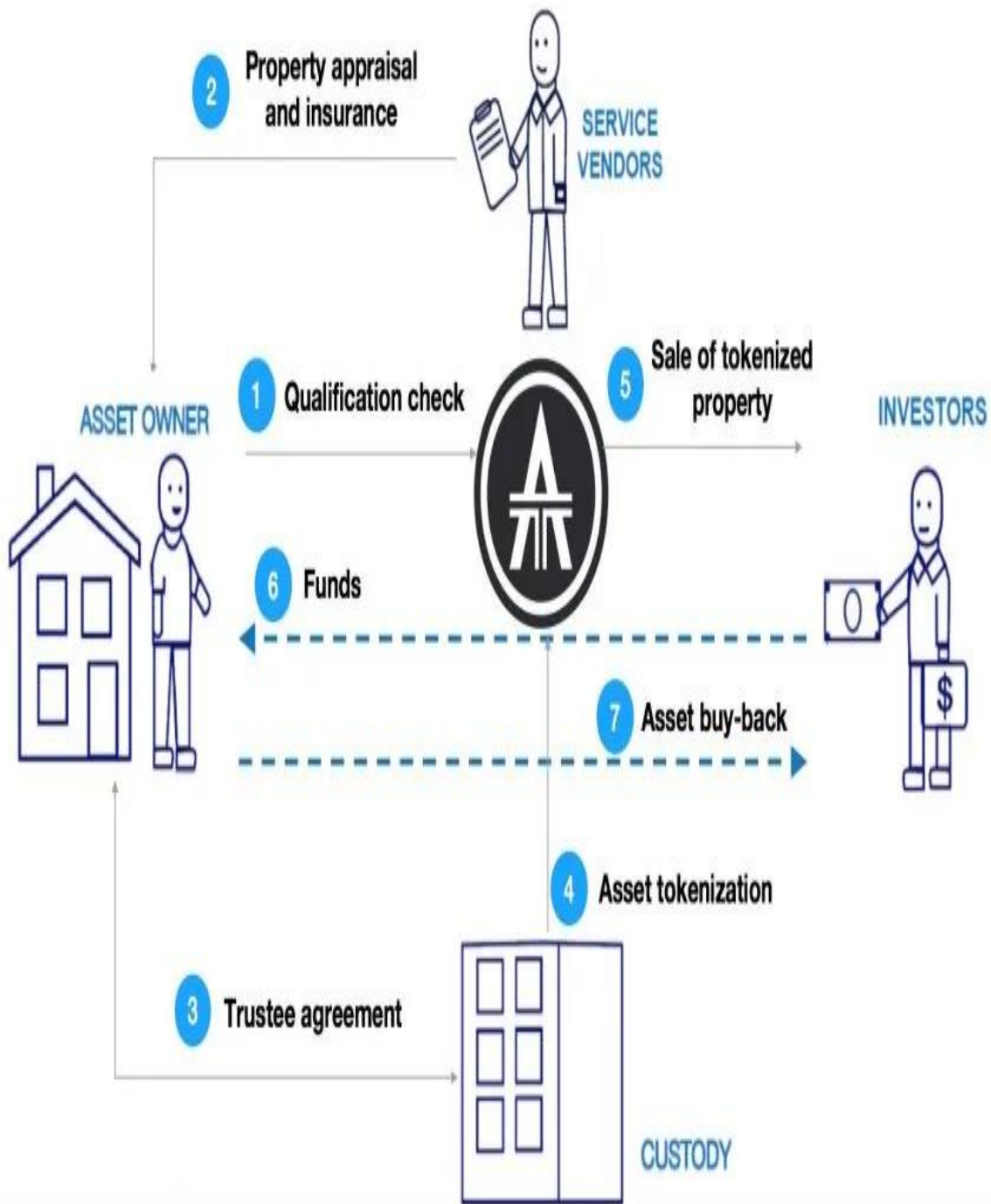
Ethereum Software Release Dates



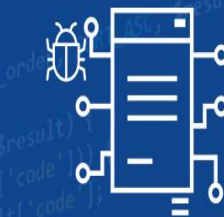


SECURITY AUDIT

A security audit is a systematic evaluation of a company's information systems, networks, and physical infrastructure. Audits are conducted by a team of security professionals who use various tools and techniques to assess the current state of an organization's security posture.



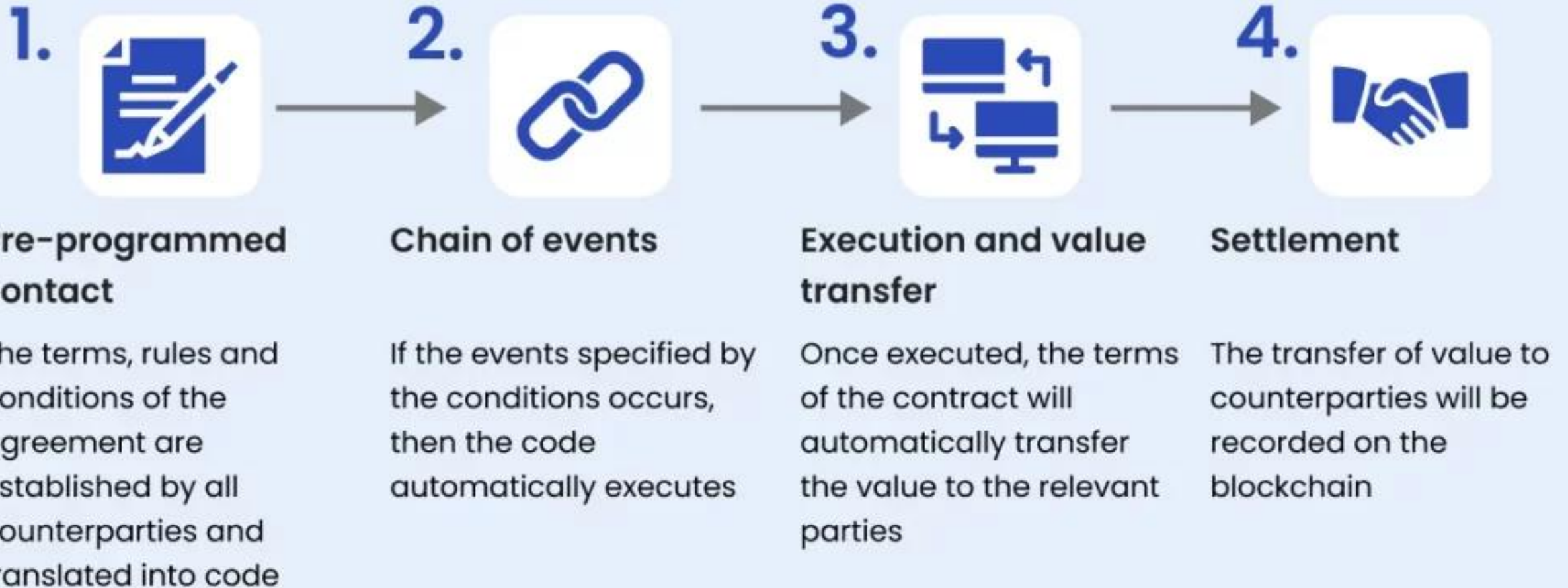
What is a Smart Contract Audit?



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00101
10100



How do Smart Contracts Work?



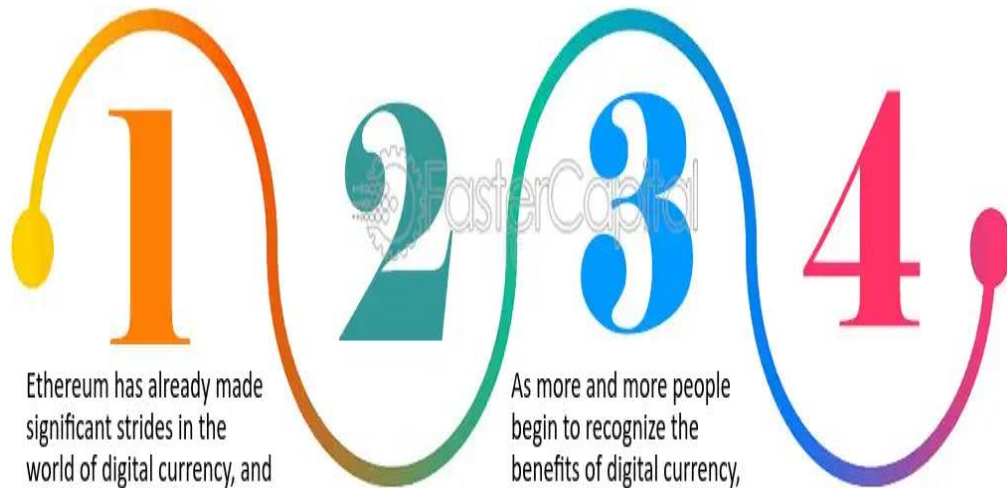


The Future of Ethereum

The Future of Ethereum and Digital Currency

The potential applications of Ethereum and other digital currencies are vast and varied

However, there are still significant challenges that must be overcome before digital currency can truly become mainstream



Ethereum has already made significant strides in the world of digital currency, and it shows no signs of slowing down

As more and more people begin to recognize the benefits of digital currency, we can expect to see increased adoption and acceptance of these new technologies

Advantages of Ethereum over Traditional Systems



Conclusion and Future Outlook for Ethereum

The Ethereum community is one of the most active and engaged in the blockchain space, with many developers working on innovative projects and dApps

Ethereum is expected to continue to grow in popularity and adoption, especially with the upcoming upgrades



The rise of DeFi has been one of the most significant developments in the Ethereum ecosystem, and it is expected to continue to grow in the coming years

The future of Ethereum is bright, but there are also challenges that lie ahead

The scaling solutions that are currently being developed for Ethereum, such as sharding and layer 2 solutions like Optimistic Rollups, are expected to make the platform more scalable and efficient



THANK YOU!

Designed By:
Mekala Vindhya
B.TECH AI&DS