BLOCKCHAIN

Decentralized Trust & the Future of Finance

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AGENDA

& Individual Contributions

01  Introduction

02  S-Curve Analysis

03  TOE Framework

04  Case Study

05  Conclusion

RESOURCES

1 Tapscott, Don and Alex. *Blockchain Revolution.* 2016.

2 Nakamoto, Satoshi. *"Bitcoin: A Peer-To-Peer Electronic Cash System."* 2008.

3 Casey, Michael J. and Paul Vigna. *The Truth Machine: The Blockchain and the Future of Everything.* 2018.

WHAT IS BLOCKCHAIN?

Introduction

Blockchain is a distributed digital ledger technology that uses a network of users to make data immutable and resistant to digital tampering. There is no central authority — it is completely decentralized.

Any node on the network maintains a copy of the entire digital ledger, where each block is cryptographically linked to the history of other blocks. The digital structure ensures that data cannot be altered without the majority consensus of the network.

This innovation has disrupted financial markets and financial technology, as well as data storage methods, improving the security and traceability of data transactions.

Distributed Ledger

Shared across all network nodes

Immutable Records

Cryptographically linked blocks

Decentralized

No central authority required

Tamper-Resistant

Consensus-based validation

EVOLUTION OF BLOCKCHAIN

Timeline

1991

First Blockchain Concept

Stuart Haber & W. Scott Stornetta created cryptographically secured chain of digital blocks for document timestamping.

1992

Merkle Trees Added

David Bayer incorporated Merkle trees, enabling multiple documents in one block to improve verification efficiency.

2008

Bitcoin Emerges

Satoshi Nakamoto combined proof-of-work consensus and hash rates to create the first fully decentralized digital currency.

WHY BLOCKCHAIN IS A NEW S-CURVE

S-Curve Analysis

Technology Discontinuity

Decentralized consensus replaces centralized data control, creating an entirely new infrastructure architecture.

Functional Discontinuity

Smart contracts automate trust and enable new use cases like programmable money and composable financial services.

Cost Discontinuity

Transaction costs drop from multi-percent fees to near-zero; cross-border settlement goes from days to seconds.

WHERE IS BLOCKCHAIN ON THE S-CURVE?

Phase 1 2015–2020

Early Research & Pilots

Phase 2 2021–2024

Early Market Adoption

Phase 3 2024–2025

Inflection Zone

KEY EVIDENCE

90.1%

CAGR from 2025 to 2030

$31.3B → $1.43T

Market size growth 2024–2030

Rising enterprise use cases across finance, supply chain & healthcare

INDUSTRIES BEING DISRUPTED

S-Curve Analysis

Financial Services

- Blockchain rewrites trust & settlement infrastructure
- DeFi TVL: grew from ~$1B (2020) to tens of billions
- On-chain payments bypass clearinghouses

Supply Chain & Traceability

- Replaces siloed databases with shared, tamper-proof ledger
- Counterfeit market exceeds $1.7T globally
- IBM–Maersk projects automate cross-border documentation

TOE FRAMEWORK OVERVIEW

Blockchain's Transformative Dynamics

T

Technological Dimension

The technological foundation enabling decentralized trust.

Blockchain Infrastructure

O

Organizational Dimension

The organizational adaptation toward hybrid finance.

DAOs, Fintech, Banks

E

Environmental Dimension

The environmental evolution — regulation, markets, and ecosystems.

Policy & Markets

TECHNOLOGICAL DIMENSION (T)

Decentralized Ledger

Transactions verified by network consensus, not a central bank

Proof-of-Work

Cryptographic validation builds trust through code

Transparency & Immutability

Once recorded, data can't be altered

Lightning Network

Second-layer innovation improving speed and cost

CHALLENGES

- ~7 TPS vs Visa's 24,000 TPS
- High energy use (~90 TWh/year)

INNOVATIONS

- Proof-of-Stake consensus
- Layer-2 scaling solutions
- More efficient, scalable, secure

Impact: Blockchain redefines financial infrastructure — trust without intermediaries.

ORGANIZATIONAL DIMENSION (O)

O1: Traditional Finance

- Centralized banking, slow innovation
- Hierarchical decision-making
- Resistant to decentralization

O2: Emerging Models

- DAOs (Decentralized Autonomous Orgs)
- Corporate: BlackRock, Fidelity, MicroStrategy
- Fintech: Coinbase, PayPal, Revolut
- Central Bank Digital Currencies

CULTURAL SHIFT

From control → collaboration → hybrid financial systems. Traditional finance embracing risk, experimentation, and fintech partnerships.

ENVIRONMENTAL DIMENSION (E)

Bitcoin as representative example

Regulation

U.S.: SEC uncertainty delays institutional adoption
EU: MiCA provides clear licensing → accelerates adoption
China: Full ban limits global network effects

Market Competition

Strong incumbents (Visa, Mastercard, SWIFT) maintain network effects
Competing tech: Ethereum/L2s, Solana, CBDCs
Institutional entry (BlackRock, Fidelity) boosts legitimacy

Social & Institutional Acceptance

ESG criticism toward PoW energy consumption
Public trust issues: volatility, hacks, scams
Younger demographics increasingly crypto-native → long-term tailwind

TOE ALIGNMENT SUMMARY

& Investment View

T

8/10

Decentralized, secure, increasingly scalable

O

6/10

Incumbents experimenting; DAOs & fintech accelerating

E

6/10

Regulation dominant constraint; uneven acceptance

Overall TOE Alignment: **7/10**

INVESTMENT VIEW: Selective YES (Long-Term)

Strong technological trajectory • Institutional adoption accelerating • Regulatory progress slow but improving • Short-term volatility & environmental misalignment remain risks

BITCOIN & BLOCKCHAIN vs. GS AI ASSISTANT

Case Study Comparison

	Decentralized Ledger	Firm-wide GenAI Platform
Technological Context	Advanced infrastructure & tech readiness	Proprietary AI models & internal tooling
Organizational Context	New capabilities and governance systems	Enterprise-wide process reengineering
Environmental Context	Regulation & reputation risk	Data privacy & compliance demands

LESSONS FROM GS AI ASSIMILATION

What Blockchain Can Learn

How does a new digital technology reshape perceptions of money and trust?

Innovation Paths

Centralized vs. decentralized innovation paths present fundamentally different trust mechanisms and governance models.

Assimilation Phases

Initiation → Adoption → Routinization

Trust mechanisms evolve through each phase as technology matures and gains acceptance.

BITCOIN BLOCKCHAIN vs. NVIDIA CUDA

Both are foundational technology platforms

Industry Impact

Both technologies have created entirely new industry ecosystems and use cases.

Ecosystem & Network Effects

Success depends on building strong developer communities and network effects.

Technological Benefits

Both provide fundamental infrastructure layers that enable higher-level innovation.

CUDA'S DIFFUSION LESSONS FOR BLOCKCHAIN

Managerial Obstacles

Technological

High Performance + Mature Tooling required before mainstream adoption can occur.

Organizational

Enterprises must restructure internal capabilities and governance to accommodate decentralized models.

Environmental

Regulatory uncertainty remains the largest barrier; clear frameworks needed to unlock adoption.

CONCLUSION

Blockchain technology has revolutionized how data is managed and verified over the past decade. It has disrupted financial markets and is being adopted in healthcare, supply chains, and various other data services.

Its proprietary method of proof-of-work consensus ensures data is immutable and transparent on a decentralized ledger without requiring a central authority.

While blockchain will face challenges of acceptance and regulation from governments worldwide, it has the potential to become a foundation for digital transactions across the globe — positioning itself on a transformative new S-Curve.

Blockchain is not a niche technology — it is foundational financial infrastructure for the future.

THANK YOU

Questions & Discussion

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