GBBC
**Global Blockchain
Business Council**

UPDATE

GLOBAL STANDARDS
MAPPING INITIATIVE 3.0
2022

TABLE OF CONTENTS

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INTRODUCTION TO GSMI 3.0

Since 2020, the Global Blockchain Business Council (GBBC) has kept the industry up to date with the Global Standards Mapping Initiative (GSMI), the most comprehensive industry-focused effort to map and analyze the blockchain and digital assets ecosystem across six key areas:

1. **Digital Assets Regulation Map**
2. **Taxonomy**
3. **Technical Standards**
4. **Blockchain & Digital Assets Landscape**
5. **University Courses & Degree Programs**
6. **Fact Cards on Key Themes**

GSMI reports and resources are crowd-sourced and open access, intended to serve as a baseline for thoughtful and workable frameworks, as well as common standards to enable adoption, incentivize further innovation, and advance collaboration. GSMI content is referenced and utilized by corporations, regulators, government agencies, and academia globally who seek a holistic view of topics that are critical to the blockchain and digital assets ecosystem.

GBBC and its partners released the first version of the GSMI in 2020 (GSMI 1.0) to highlight the most relevant topics for blockchain and digital assets. This included an interactive map of regulatory developments across **185 jurisdictions**, legal and regulatory report, technical report cataloguing outputs from over 30 technical standard-setting bodies, taxonomy for blockchain and digital assets concepts, and a list of industry consortia.

In response to insights and feedback from the initial release, GBBC later partnered with **130 leading institutions**, including more than **200 participants**, to release GSMI 2.0 as an expansion and continuation of the initial work produced. GSMI 2.0 was spearheaded by **nine working groups**, each focused on a topic of critical importance to the continued advancement of blockchain and digital assets. The findings, key insights, and action-oriented guidance proposed by each of these working groups were captured in a series of reports. These included discussions on the role of blockchain technology for the green economy, taxation, derivatives, and other topics. GSMI 2.0 also updated the interactive map of regulatory developments to contain **187 jurisdictions**, further developed the repository of technical standards bodies to include **37 entities**, and added to the taxonomy to include **182 relevant terms** for blockchain and digital assets. Finally, GSMI 2.0 introduced a new catalogue of accredited academic institutions offering a combined list of **300+ blockchain courses**.

GBBC GSMI 3.0

GSMI by Numbers

210	180+	50	2000+	700+
JURISDICTIONS	DEFINITIONS	STANDARDS BODIES	STAKEHOLDERS	UNIVERSITY COURSES
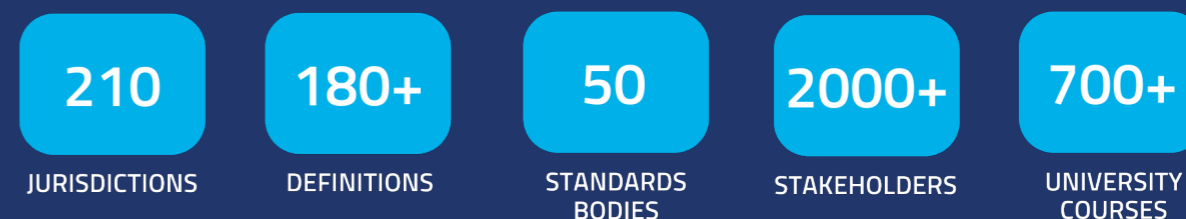
For the regulatory map, the team expanded the content and made it more robust, covering **210 jurisdictions** and gathering official documentation released by government bodies (e.g., legal statutes, circulars, etc.). The technical standards section was made more comprehensive. It now includes both standardized sections, to enhance comparability among technical standards setting bodies, alongside sections to self-identify and maintain the nuance in their approach. The university courses and professional certificates were updated to **700**, as accredited academic institutions are increasingly incorporating blockchain topics into their curriculum, driven partially by student demand.

GSMI now offers interactive data tables that facilitate searchability for technical standards bodies and universities. In addition, GSMI 3.0 introduces a blockchain and digital assets landscape mapping **2,000 stakeholders** across essential functions (e.g., data analytics providers, exchanges, wallets and custodians, decentralized finance applications, supporting infrastructure).

Given the importance of common terminology precisely to foster collaboration among stakeholders, the GSMI taxonomy is again featured in GSMI 3.0, with statistics that bring light not only to basic terms but also to industry sectors that are likely to undergo significant disruption with this technology: finance, green economy, digital identity, and supply chains. GSMI 3.0 also launches a new Fact Card Series to illustrate the main concepts of prior reports, as well as the latest trends in the space (e.g., crypto markets, green economy, central bank digital currencies, blockchain for taxation). These fact cards are meant to highlight key themes and statistics relevant to each subtopic.

Acknowledging the growing importance of sustainability, in its many forms, GSMI has begun to cover topics including governance of digital assets, consumer and investor protections, financial inclusion, and environmental impacts. As reflected in the map, regulators around the world are working to improve governance in the space, while bringing clarity to consumer and investor protections that are fundamental for social outcomes related to financial inclusion. They are also considering requirements for crypto mining due to energy consumption concerns. Moreover, technical standards are incorporating environmental considerations as this technology is becoming recognized to provide the transparency necessary for the growth of carbon markets. Hence, a sector of the landscape is devoted to projects using blockchain and digital assets to advance sustainability, and a subset of the taxonomy is also devoted to environmental terms.

Finally, GSMI 3.0 includes a detailed report from our partners in China on the latest status of blockchain developments in the country, spanning policy, technical standards and requirements, and domestic applications that have expanded significantly as part of the digital economy.

The resources provided in this GSMI 3.0 update are made possible by the contributions of our partners, fellows, scholars, and GBBC staff. GBBC collaborated with the IFC-Milken Institute Capital Markets Scholars, who played a key role in assisting with research and analysis. GBBC also collaborated with global academic institutions as part of the GSMI Fellows Program (launched for GSMI 2.0), an eight-month fellowship for exceptional students to contribute to this ongoing work. For the technical standards update, GBBC had the pleasure of working with seasoned experts in the standard setting space who provided invaluable insights.

We look forward to further collaborations and welcome feedback and additional contributions as we build upon this release. We will continue to update the datasets as this space continues to expand to shape many aspects of our civilization.

BLOCKCHAIN & DIGITAL ASSETS REGULATION

Regulatory developments around the world for blockchain and digital assets continue to take form, as government bodies increasingly recognize the role of this technology in financial markets, infrastructure, and all economic sectors. The growth of this technology can benefit greatly with increasing regulatory clarity, a harmonized approach across jurisdictions, and a balance that will support innovation in a way that fosters inclusion without forsaking security and protections for consumers and investors.

The road ahead is yet to be paved. Instances of excessive hype, irregular activity outside the purview of regulation, and resulting losses have highlighted the need for adequate regulation time and time again. Government bodies are increasingly taking part in discussions and assessments for regulatory requirements, regulatory sandboxes are facilitating testing environments, and enforcement actions and case law are setting new precedents for the legal treatment of this technology.

210 JURISDICTIONS

GSMI 2.0 included 187 jurisdictions, which were increased to 210 jurisdictions for GSMI 3.0, which include sovereign countries, monetary unions (European Union and African monetary unions), and states (US states). Regulatory developments span a wide range of issues (e.g., central bank digital currencies, banking, financial surveillance, consumer protections, taxation, etc.) and take various forms including legislation, circulars, official statements, and guidance released by government bodies. To the extent possible, GSMI 3.0's map of global regulatory developments includes references to the primary resources – official documentation released by each country's public agencies.

In 2022, several landmark regulatory developments took shape, such as the European Union's Markets for Crypto-Assets Regulation (MiCA) and the United States White House's multiple reports following the Executive Order on Ensuring Responsible Development of Digital Assets. Many regulatory approaches are underway around the world as a result, so the map will continue to evolve moving forward. Successful frameworks in one jurisdiction serve not only to attract blockchain and digital assets activities to pursue registration and licensing, and thus boost economic activity, but also provide learnings for other jurisdictions to follow suit. The most common topics of focus thus far have been comprehensive regulatory frameworks in development for blockchain and digital assets as an industry, followed by financial surveillance including AML/KYC, and consumer protection measures.

WE HOPE THIS REPOSITORY CAN PROVIDE HELPFUL TOOLS FOR ENTITIES SEEKING TO PURSUE AND EXPAND THEIR ACTIVITIES IN BLOCKCHAIN AND DIGITAL ASSETS, REGULATORS SEEKING TO LEARN FROM OTHERS' EXPERIENCES, AND DECISIONMAKERS AROUND THE WORLD WHO ARE CONTEMPLATING THIS NEW TECHNOLOGY IN THEIR RESPECTIVE ACTIVITIES.

Jurisdictions by Geographical Region

Oceania 3.3% — 7
North America (Including U.S. States) 25.2% — 53
Latin America & Caribbean 11% — 23
Europe 22.9% — 48
Asia 18.1% — 38
Africa 19.5% — 41

Major Issues for Regulation

Classification of Crypto
Banking
Crypto Ban
CBDCs
Taxation
Consumer Protection
Financial Surveillance
Comprehensive Regulatory Framework

0   100   200   300   400

Number of Regulatory Developments

TAXONOMY

In order to foster the level of collaboration across stakeholders necessary for scale, it is essential to operate under a common language. As the space develops at lightning speed, where definitions can evolve at the pace of new applications being launched, common understanding has become both increasingly critical and progressively complex. Moreover, as many have adapted to working, learning, and interacting remotely, the need for clear and consistent communication is more important than ever, underscored by universally accepted definitions.

The GSMI Taxonomy provides **182 terms** specific to blockchain and digital assets, with crowdsourced and standardized definitions that capture the full meaning of each concept as it is utilized in the industry today. Just over half of these terms encompass core concepts for blockchain technology, while the rest are categorized as terms specific to sectors where this technology is already bringing major changes – finance, environmental initiatives, digital identity, and supply chain.

THE SIGNIFICANCE OF TAXONOMY

Shared language creates the foundation for collaborative understanding and progress, bringing together stakeholders with shared interests to advance common goals and standards. Blockchain, often in combination with other emerging technologies, is already breaking silos and progressing substantive solutions to move our world in a positive direction and meet the most pressing challenges of our time. We have seen these tools accelerate vaccine distribution, improve the lives of refugees, redefine the way we produce and consume art, reimagine electrical grids, facilitate corporate responsibility, and reshape our capacity to combat climate change.

At the core of the GSMI taxonomy is the acknowledgement that global innovators creating solutions to address society's toughest challenges need globally accepted standards to facilitate impactful and responsible cross-border innovation. This work builds on materials and knowledge from prior shared taxonomies, and in highlighting industry-specific concepts, emphasizes the tangible ways that this technology can transform our everyday lives.

Moreover, often regulatory clarity follows advances in collaborative developments resulting in applications that work well across stakeholders, where a shared acceptance of best practices is built on common terminology and understanding. Taxonomy is imperative for harmonized global regulatory developments which are fundamental for scale and credibility. Regulators around the world have produced taxonomies to classify digital assets, as well as definitions preceding statutes, as part of comprehensive frameworks in development that are tailored for this space.

Finally, as this work is meant to evolve alongside the progress of the blockchain and digital assets ecosystem, we welcome recommendations and additional resources that will enable us to further refine the quality and scope of this effort.

Blockchain & Digital Assets Taxonomy

28 Financial Terms

24 Environmental Terms

17 Digital Identity Terms

10 Supply Chain Terms

103 Technology Terms
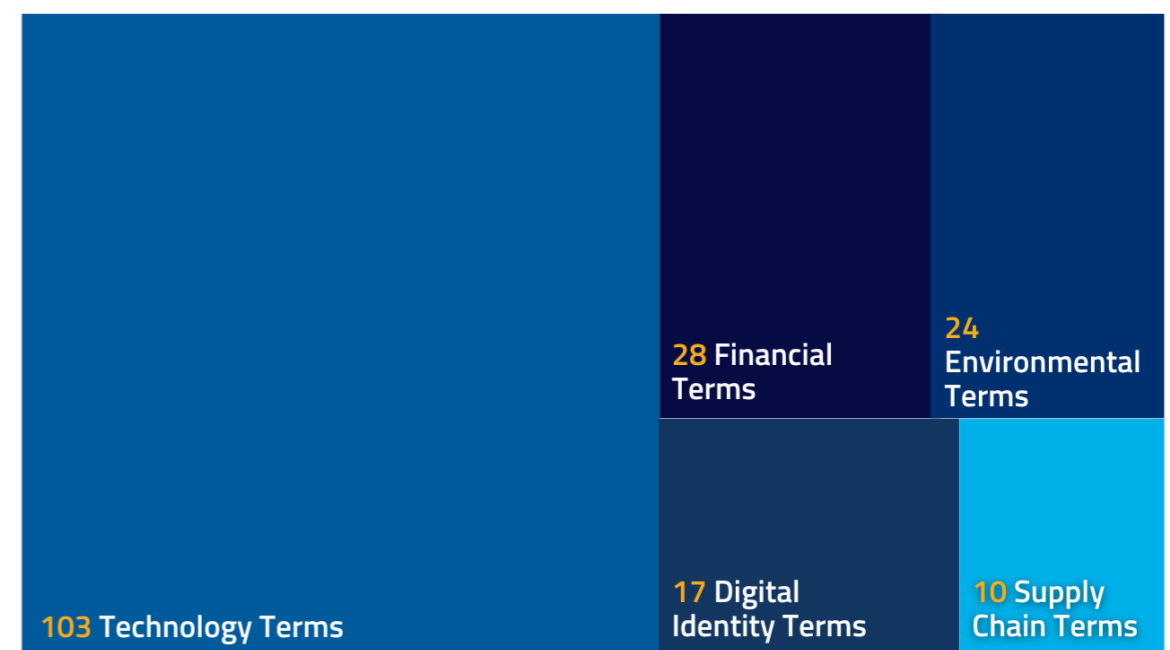
TECHNICAL STANDARDS
**Landscape Assessment of Standards
in Blockchain for Industry**

Technical standards for developments in blockchain and digital assets, as in any new technology, are fundamental to ensure safety, reliability, and further innovation. They establish common guidelines, definitions, and rules through technical criteria, specifications, methodologies, and practices, all of which serve to ensure adequate functionality. Collaboration is fundamental for the growth of an industry, in ways that will ultimately lead to widespread acceptance of formalized rules and regulations. This repository of **50 technical standards bodies** is meant to provide an objective overview of the state of standards developments today for blockchain and digital assets, with no vested interests from any particular organization.

TECHNICAL STANDARDS IN GSMI 3.0

For 2023, GBBC worked to make the Technical Standards Report more user-friendly based on the stated outcomes of a standards organization. The Technical Standards report provides insight into what each organization is focused on related to blockchain, defined by its intended outcome objective: whether it is a code of conduct (e.g., standards and best practices, governance frameworks), a set of technical specifications (e.g., engineering design and code), or a clear regulatory focus (e.g., compliance, regulatory developments, and necessary conditions prior to regulatory enforcement).

GBBC has built upon GSMI 2.0 to include **13 additional standards organizations** – mapping a total of **50 technical standards bodies**. GSMI is a body of ongoing collaborative work, where we invite the community to provide feedback or suggest contributions for additional standards bodies. As we look to the future, the GBBC continues to lay the groundwork for GSMI to be updated as a wiki in Github, through which we will seek to promote interoperability not only to improve collaboration, but also to promote better alignment.

Focus of Proposed Outcome

Number of Technical Standards Bodies

Conduct/Governance	Technical	Regulatory
37	28	15
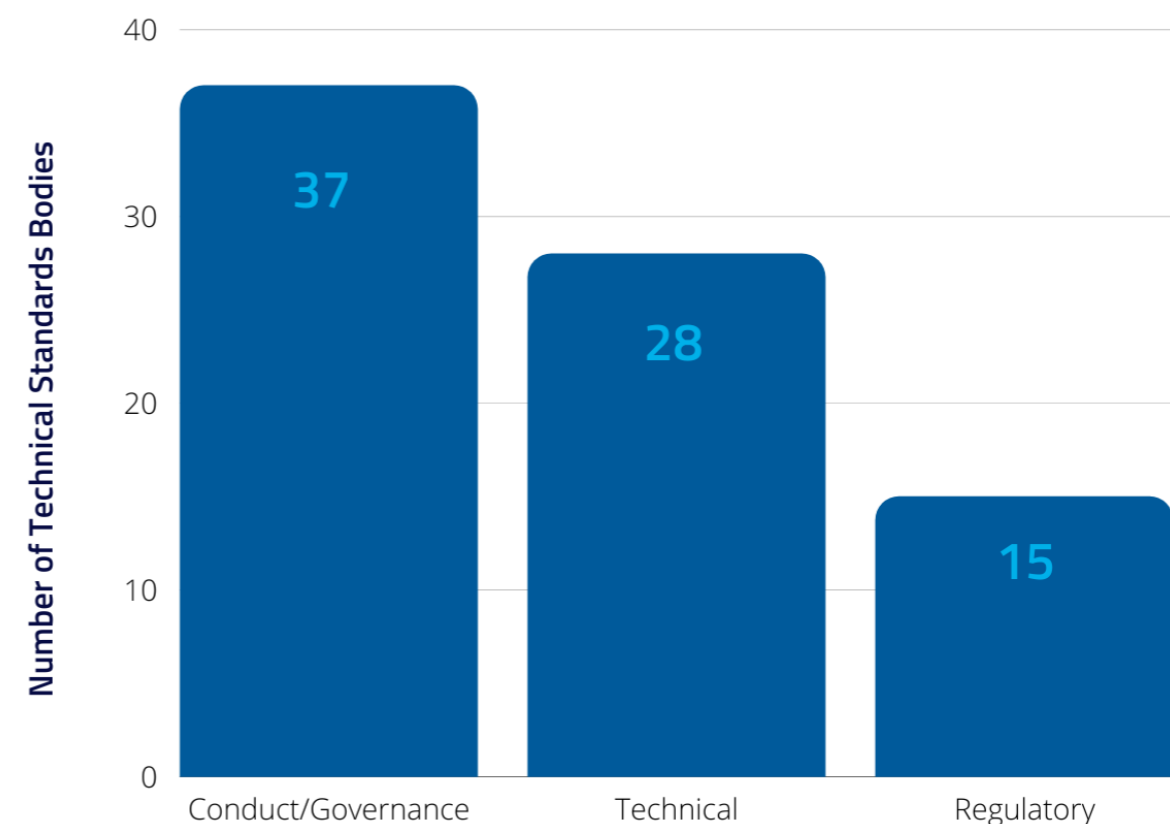
BLOCKCHAIN & DIGITAL ASSETS LANDSCAPE

The blockchain and digital assets landscape is made up of products, services, platforms, and infrastructure that together support a wide range of developments and applications. Use cases and infrastructure developments are unfolding across all industry verticals, bringing a new generation of decentralized business models that rely heavily on communities of users and participants in order to make decisions and scale. A global mapping of this landscape, with key stakeholders and their interactions, is illustrated below.

Ecosystems are especially important for blockchain and digital assets because decentralization allows a new level of peer-to-peer interactions, and therefore, scale depends on increasing the number of engaged participants. As with any networked technology, the growing size of a community of users will increase the value of an innovation exponentially. We hope that this landscape can be a resource for members of our community to find areas of collaboration and growth with others.

This landscape includes a broad overview of major stakeholders and their roles. Data providers, for instance, are essential in providing insights on latest developments in the space, while analytics tools are being applied to track and trace the activity recorded on the blockchain for the purpose of making informed decisions with respect to market activity, and detecting suspicious behavior. Interactive platforms play a key role for users to connect directly with each other and also with platforms.

2,000+ Stakeholders*

Data	Wallets	Supporting Infrastructure	Funders
140+	120+	250+	80+

Exchanges Centralized & decentralized (dexes)	Custodians	DeFi Not including dexes	Sustainability-Focused Entities
900+	150+	140+	200+

* Stakeholders in the landscape may take up multiple roles (e.g., an exchange providing research/data and wallet infrastructure)

Given infrastructure providers – particularly exchanges, wallets, and custodians - are also a fundamental aspect of the landscape, blockchain and digital assets have emerged outside of the traditional banking system and therefore require specialized platforms to enable participants to purchase tokens and hold them securely. There is still a growing field of additional supporting infrastructure – trade execution services including liquidity, order routing, interoperability, enterprise provisioning to support largescale use cases, and mining and staking services – to ensure a properly functioning financial market arrangement.

As for the wide range of applications being built on blockchain technology across industries, this landscape will continue to evolve, as numerous startups and corporates continue to innovate, expand, and consolidate. The Decentralized Finance (DeFi) space is a case in point where alternative financial services built on blockchain protocols have emerged to create a truly global liquidity pool. Moreover, with the role of blockchain to provide transparency and accountability through open data, the increasing global interest in sustainability is recognizing the value of this technology to add the necessary element of credibility for voluntary carbon markets; impact measurement, reporting, and verification; and a vast array of socially and environmentally minded business models.

Underlying these activities, a clear regulatory framework that can support these innovations is imperative, and funding for growth will incentivize scale. Finally, much of the governance and basic functionality for now relies on the structure of the basic blockchains on which applications are built and activities carried out.

The GSMI 3.0 team provides access to the full list of **2,000+ stakeholders** and welcomes further suggestions from the community. We are in the early innings of this multi-trillion dollar industry, with many more developments underway and innovations to come.
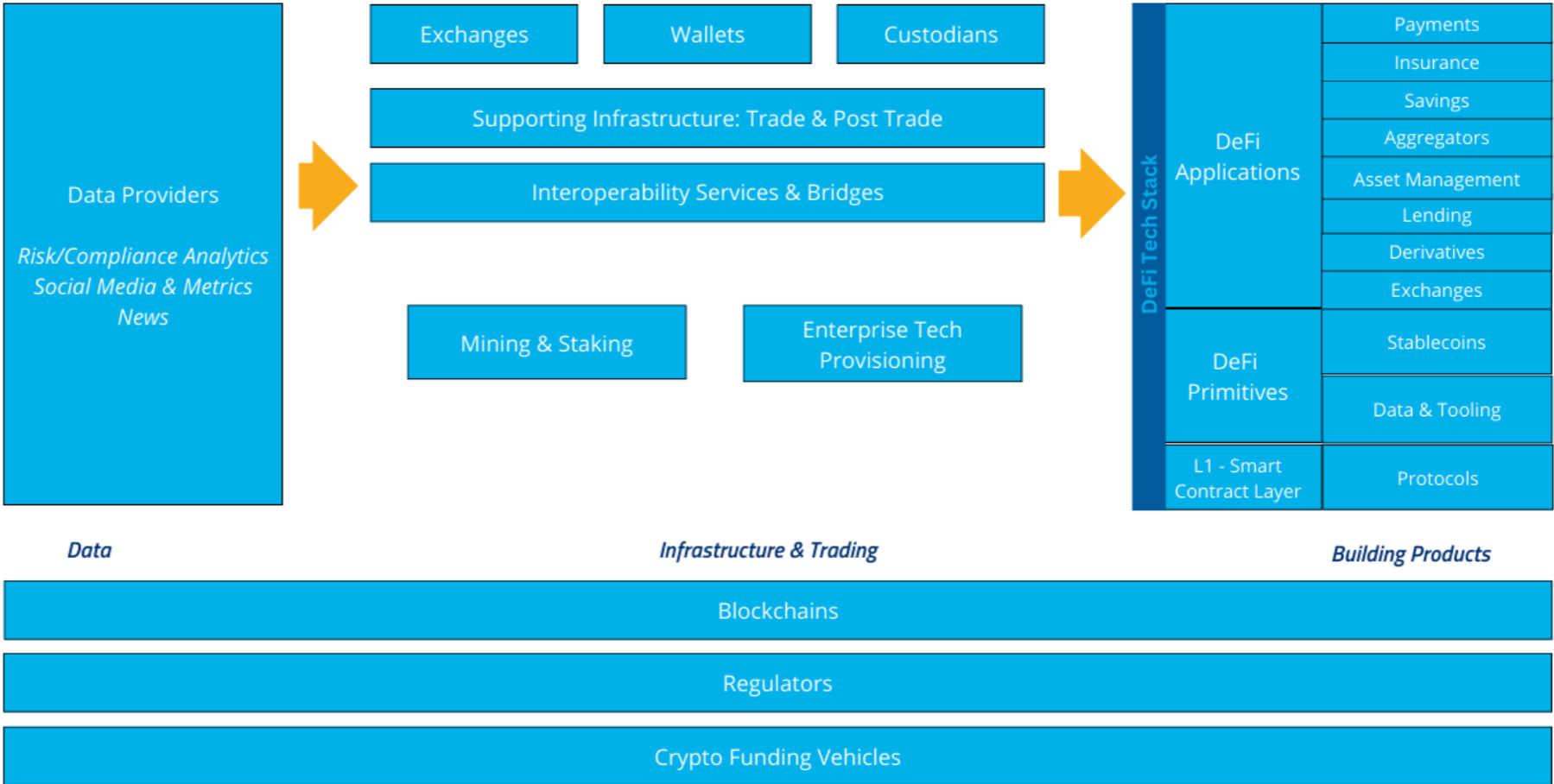
UNIVERSITY COURSES & DEGREE PROGRAMS

Where is blockchain being taught?

Blockchain is being increasingly incorporated into the curriculum taught at universities and other educational institutions around the world, offering academic degrees and other certifications. We have compiled this repository of over 700 courses spanning multiple academic disciplines. By compiling this repository of courses related to blockchain, the GBBC hopes that this resource will improve accessibility to course offerings and trainings for those seeking a more formal education. It also is GBBC's goal for GSMI 3.0 to enable educators to connect with each other and promote knowledge sharing and other collaborations, such as research on common topics.

Courses by Region

- Africa 17.5%
- North America 29.5%
- Latin America & Caribbean 13.5%
- Europe 21.7%
- Oceania 8.2%
- Asia 9.6%

Courses by Degree Level

- Professional Studies & Certificates 10.3%
- Other (Doctorate, Research, etc.) 8.8%
- Undergraduate 34.9%
- Undergraduate & Graduate 2.4%
- Graduate 43.7%
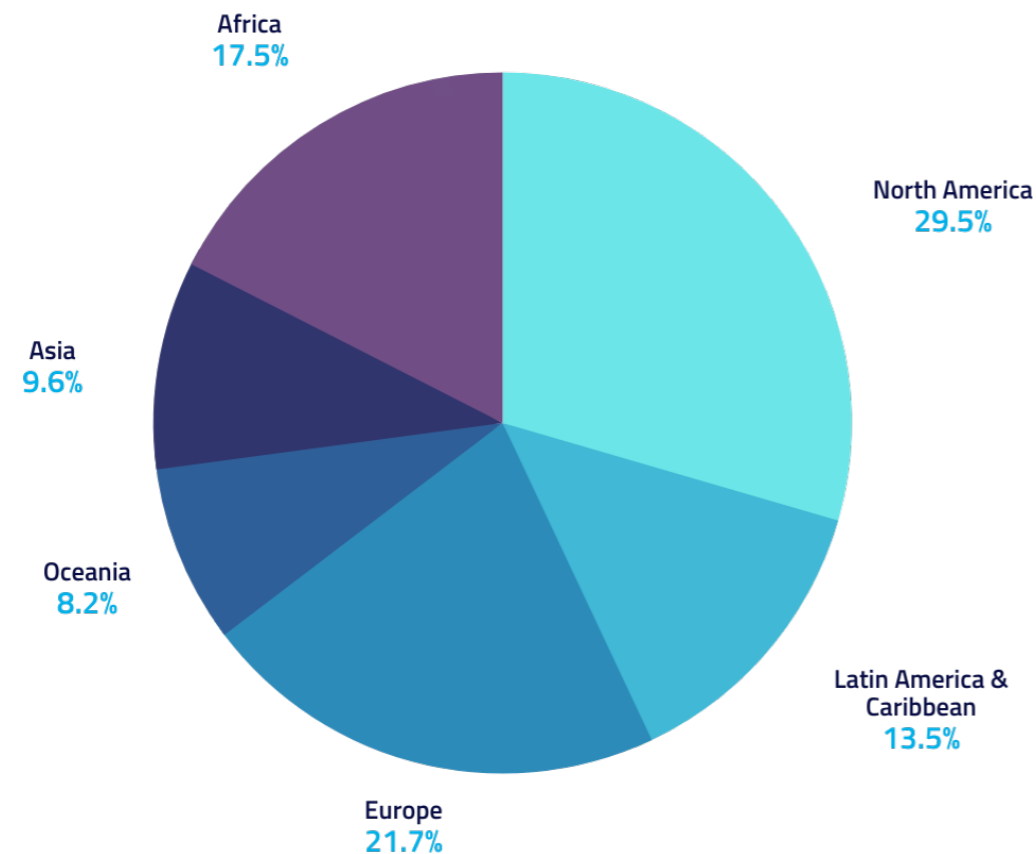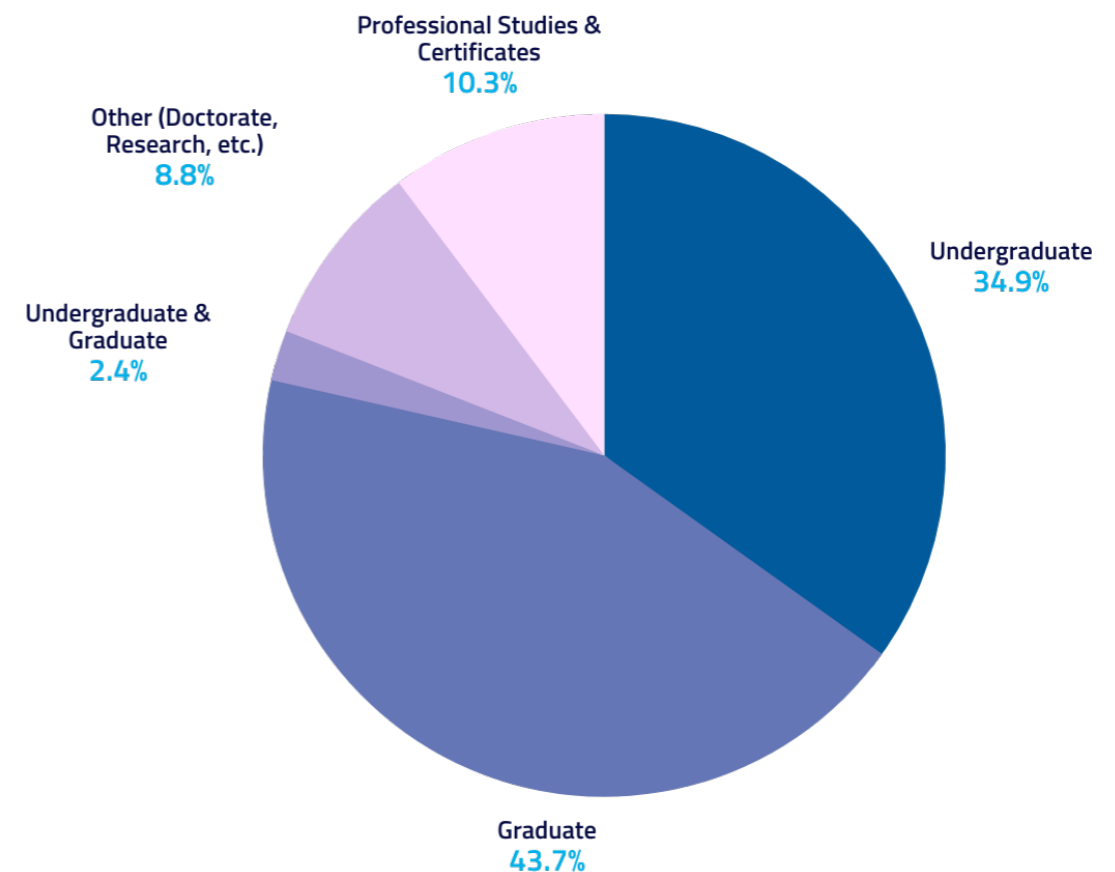
ACCESS THE LISTING OF BLOCKCHAIN-RELATED COURSES IN UNIVERSITIES AND OTHER EDUCATIONAL INSTITUTIONS HERE, AS WELL AS THE FORM TO COLLECT ADDITIONAL SUBMISSIONS FOR COURSES HERE.

STUDENTS, PROFESSORS, AND OTHERS IN ACADEMIA CAN SUBMIT BLOCKCHAIN COURSES FOR INCLUSION THROUGH THE FORM. EDUCATIONAL INSTITUTIONS CAN APPLY FOR THE GBBC OBSERVING MEMBERSHIP PROGRAM.

Courses by Academic Field

Professional Studies & Certificates
9.3%

Law
5.4%

Economics & Humanities
6.3%

Business & Entrepreneurship
31.4%

Computer Science & Engineering
47.6%
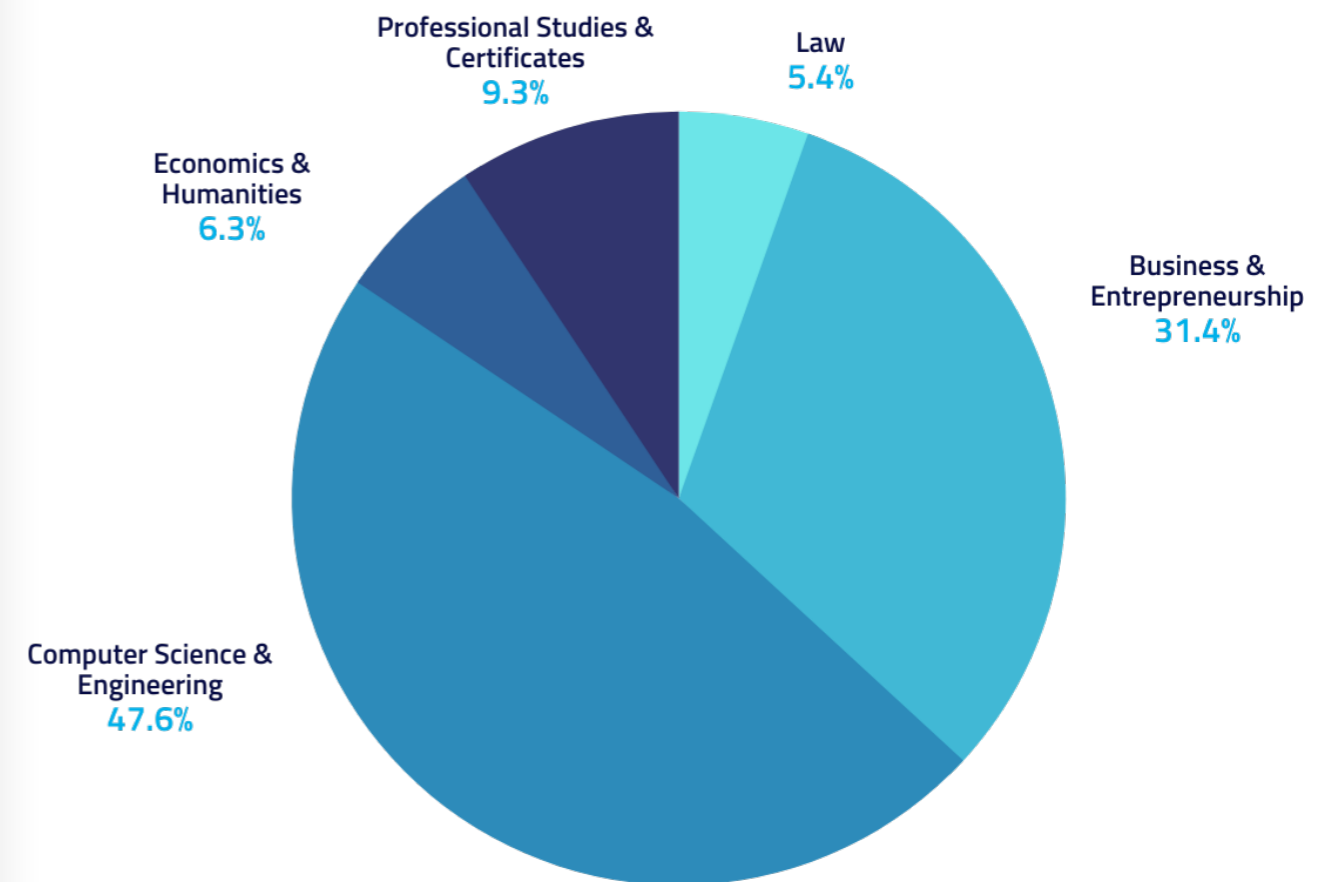
FACT CARDS ON KEY THEMES

GSMI 3.0 introduces a new Fact Card Series, looking to highlight key subjects within the blockchain and digital assets space in visual and meaningful ways. These fact cards build on prior research initiatives, drawing inputs from our membership base and a broad network of experts. We aim to educate and incentivize understanding of the most critical themes and their underlying relationships. Ultimately, we hope these fact cards can become a useful tool to drive this technology forward and foster strategic partnerships.
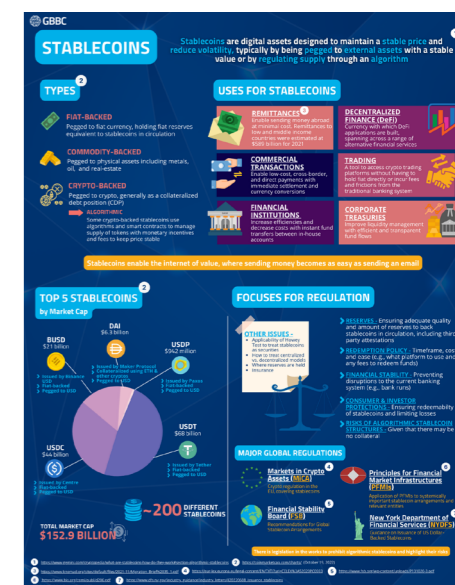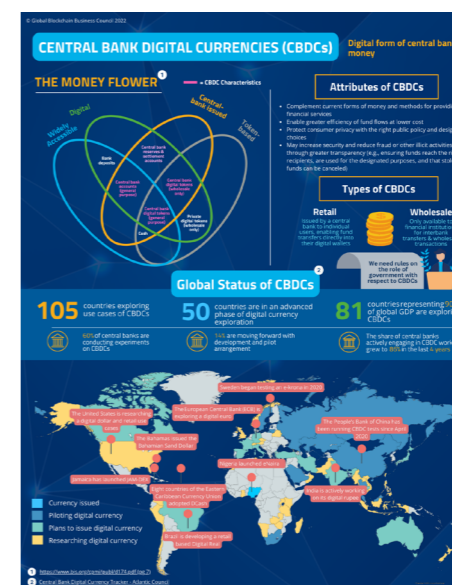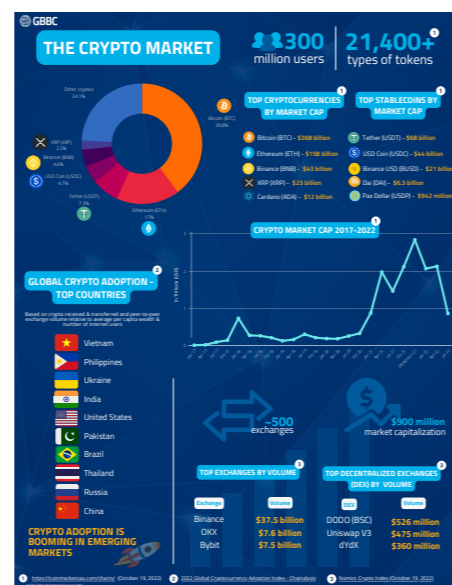
View Fact Cards on Pages 26-37.

GBBC
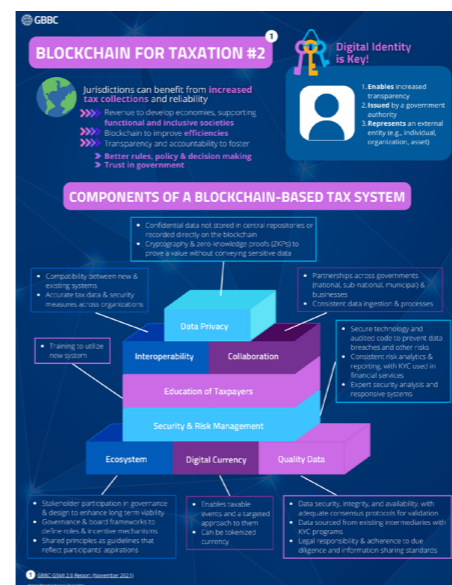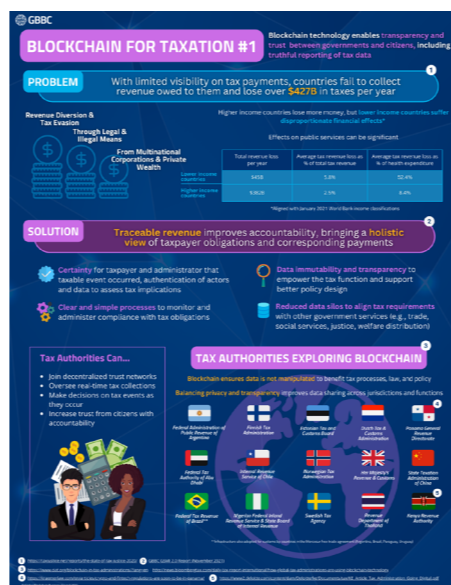
THE CRYPTO MARKET

300 million users

21,400+ types of tokens [1]

Crypto Market Share (donut chart)

- Other cryptos 24.1%
- Bitcoin (BTC) 39.8%
- XRP (XRP) 2.5%
- Binance (BNB) 4.6%
- USD Coin (USDC) 4.7%
- Tether (USDT) 7.3%
- Ethereum (ETH) 17%
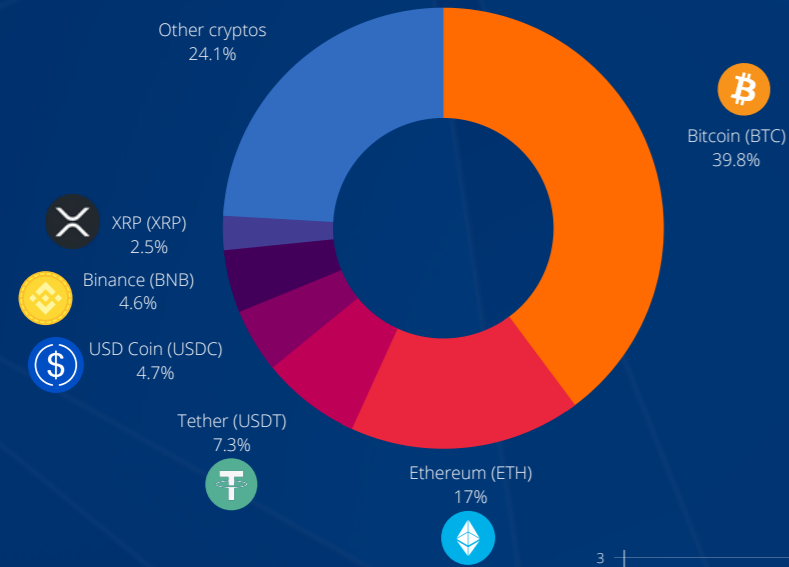
TOP CRYPTOCURRENCIES BY MARKET CAP [1]

- Bitcoin (BTC) - **$368 billion**
- Ethereum (ETH) - **$158 billion**
- Binance (BNB) - **$43 billion**
- XRP (XRP) - **$23 billion**
- Cardano (ADA) - **$12 billion**

TOP STABLECOINS BY MARKET CAP [1]

- Tether (USDT) - **$68 billion**
- USD Coin (USDC) - **$44 billion**
- Binance USD (BUSD) - **$21 billion**
- Dai (DAI) - **$6.3 billion**
- Pax Dollar (USDP) - **$942 million**

CRYPTO MARKET CAP 2017-2022 [1]

Y-axis: In Trillions (USD), 0 to 3
X-axis: Jan'17, Apr'17, Jul'17, Oct'17, Jan'18, Apr'18, Jul'18, Oct'18, Jan'19, Apr'19, Jul'19, Oct'19, Jan'20, Apr'20, Jul'20, Oct'20, Jan'21, Apr'21, Jul'21, (PEAK) Nov'21, Jan'22, Apr'22, Jul'22

GLOBAL CRYPTO ADOPTION - TOP COUNTRIES [2]

Based on crypto received & transferred and peer-to-peer exchange volume relative to average per capita wealth & number of internet users

- Vietnam
- Philippines
- Ukraine
- India
- United States
- Pakistan
- Brazil
- Thailand
- Russia
- China

CRYPTO ADOPTION IS BOOMING IN EMERGING MARKETS

~500 exchanges

$900 million market capitalization

TOP EXCHANGES BY VOLUME [3]

Exchange	Volume
Binance	$37.5 billion
OKX	$7.6 billion
Bybit	$7.5 billion

TOP DECENTRALIZED EXCHANGES (DEX) BY VOLUME [3]

DEX	Volume
DODO (BSC)	$526 million
Uniswap V3	$475 million
dYdX	$360 million

GSMI FACT CARD SERIES

THE CRYPTO MARKET

The Crypto Market fact card provides an overview of the top cryptocurrencies by market cap, top exchanges, market dynamics, and highlights of key countries across global cryptocurrency adoption indices.

GSMI FACT CARD SERIES

THE GREEN ECONOMY

The Green Economy fact card addresses the crucial need for socially inclusive, low carbon, and resource efficient economic growth. Blockchain brings transparency and credibility to the growing marketplaces for carbon offsets, addressing the global imperative to take urgent climate action.

GBBC · **InterWork Alliance**

THE GREEN ECONOMY

Read GBBC's Global Standards Mapping Initative 2.0 for Additional Information about The Green Economy

Problem 1 — The world generates roughly **51 billion** tons of greenhouse gas (GHG) emissions per year

- Manufacturing 31%
- Other 7%
- Transportation 16%
- Agriculture and Land 19%
- Energy Production 27%

Solution 2

Socially Inclusive · Low Carbon · **GREEN ECONOMIC GROWTH** · Resource Efficient
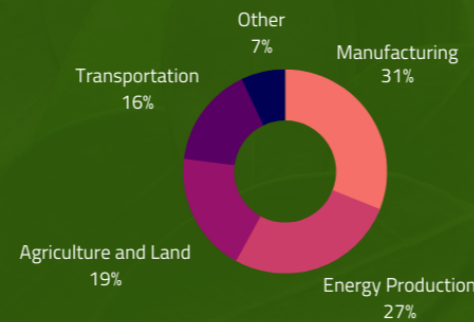
URGENT CLIMATE ACTION — Reduce emissions & offset carbon !

Climate Action Must Be...
- Scalable
- Comprehensive
- Predictable
- Collective
- Equity oriented
- Science-based
- Transparent
- Nature-positive
- Consistent
- Contributing to financing of targets

Key Players 2
- Retailers
- Registries
- Producers
- Supranational organizations
- Governments
- Consumers
- Standards organizations

Types of Carbon Markets 2

Voluntary — Need global standards for marketplaces of measurable & verifiable carbon reductions

Regulated — Governmental agency (nation-state or treaty) enforces mandate to offset emissions

A Green Economy is a Global Effort 1

- Decarbonization costs are rising
- Emission reductions are hard
- Demand is outpacing supply for verified offsets
- No alternative technologies

Partnerships

UNITED NATIONS PARIS CLIMATE AGREEMENT 22 APRIL 2016

GOALS 3
1. **Address** climate change and its negative impacts
2. **Aim** to reduce global greenhouse gas emissions to less than 2° C above preindustrial levels
3. **Limit** global temperature increase to 1.5° C

The Role of Blockchain 1

Decarbonizing the global economy by developing...

- **Global interoperable marketplaces** for carbon offsets
- **Price discovery for offset quality** based on additionality, permanence, efficiency, and verifiability
- **Emissions tracking** across supply chains

CO₂ → Offsets

Sellers → Tokenization → Market → Buyers

CRYPTOCURRENCIES enable participation in ecosystem management

PROOF-OF-STAKE (POS) CONSENSUS is fast & energy efficient

DECENTRALIZED AUTONOMOUS ORGANIZATIONS (DAOs) enable community ownership & governance while bringing together supply & demand

NON-FUNGIBLE TOKENS (NFTs) allow traceability of emissions, address quality variance, and provide programmatic liability management

1 https://www.morganstanley.com/im/publication/insights/articles/article_cryptoandcarbon_us.pdf
2 https://gbbcouncil.org/wp-content/uploads/2021/11/GBBC-GSMI-2.0-Report-1.pdf
3 https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

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CENTRAL BANK DIGITAL CURRENCIES (CBDCs)

Digital form of central bank money

THE MONEY FLOWER ①

— = CBDC Characteristics

Central-bank issued

Digital

Widely Accessible

Token-based

- Bank deposits
- Central bank reserves & settlement accounts
- Central bank accounts (general purpose)
- Central bank digital tokens (wholesale only)
- Central bank digital tokens (general purpose)
- Private digital tokens (wholesale only)
- Cash
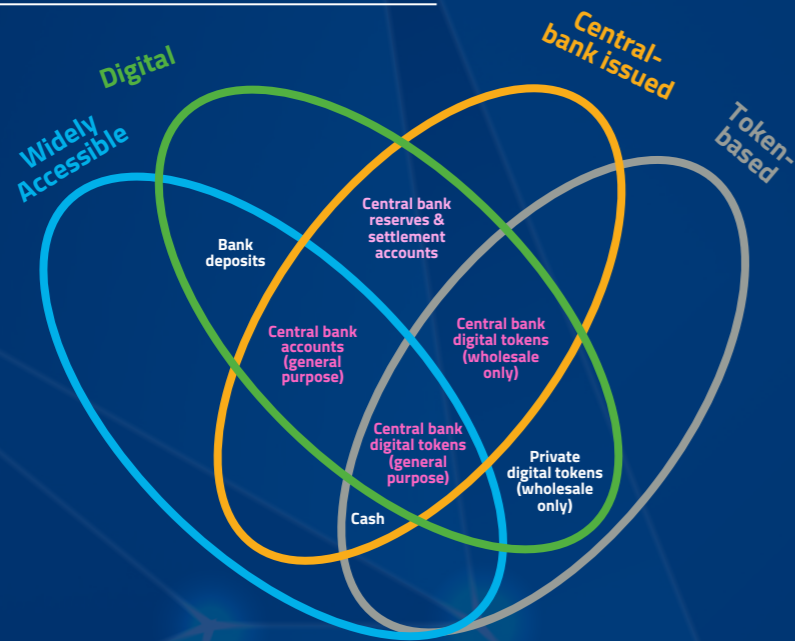
Attributes of CBDCs

- Complement current forms of money and methods for providing financial services
- Enable greater efficiency of fund flows at lower cost
- Protect consumer privacy with the right public policy and design choices
- May increase security and reduce fraud or other illicit activities through greater transparency (e.g., ensuring funds reach the right recipients, are used for the designated purposes, and that stolen funds can be canceled)

Types of CBDCs

Retail
Issued by a central bank to individual users, enabling fund transfers directly into their digital wallets

Wholesale
Only available to financial institutions for interbank transfers & wholesale transactions

We need rules on the role of government with respect to CBDCs

Global Status of CBDCs ②

105 countries exploring use cases of CBDCs

50 countries are in an advanced phase of digital currency exploration

81 countries representing 90% of global GDP are exploring CBDCs

60% of central banks are conducting experiments on CBDCs

14% are moving forward with development and pilot arrangement

The share of central banks actively engaging in CBDC work grew to 86% in the last 4 years

Sweden began testing an e-krona in 2020

The European Central Bank (ECB) is exploring a digital euro

The United States is researching a digital dollar and retail use cases

The People's Bank of China has been running CBDC tests since April 2020

The Bahamas issued the Bahamian Sand Dollar

Nigeria launched eNaira

Jamaica has launched JAM-DEX

India is actively working on its digital rupee

Eight countries of the Eastern Caribbean Currency Union adopted DCash

Brazil is developing a retail based Digital Real

- Currency issued
- Piloting digital currency
- Plans to issue digital currency
- Researching digital currency

① https://www.bis.org/cpmi/publ/d174.pdf (pg 7)
② Central Bank Digital Currency Tracker - Atlantic Council

CENTRAL BANK DIGITAL CURRENCIES (CBDCs)

Central banks all over the world are contemplating digitizing their local currencies in the form of CBDCs.

With this new form of central bank issued money, the benefits of transparency and efficiency in transactions have to be balanced with privacy considerations and the need for adequate security measures.

GSMI FACT CARD SERIES

STABLECOINS

The Stablecoins fact card provides an overview of the types of stablecoins, uses for stablecoins, and regulatory considerations. Stablecoins are digital assets designed to maintain a stable price.

They have become widely adopted as a means to transfer value and streamline a wide range of financial services while reducing costs. Because of their role for the future of money, stablecoins have also become a major focus for global regulations.

GBBC

STABLECOINS

Stablecoins are digital assets designed to maintain a stable price and reduce volatility, typically by being pegged to external assets with a stable value or by regulating supply through an algorithm [1]

TYPES [2]

FIAT-BACKED
Pegged to fiat currency, holding fiat reserves equivalent to stablecoins in circulation

COMMODITY-BACKED
Pegged to physical assets including metals, oil, and real-estate

CRYPTO-BACKED
Pegged to crypto, generally as a collateralized debt position (CDP)

➤ **ALGORITHMIC**
Some crypto-backed stablecoins use algorithms and smart contracts to manage supply of tokens with monetary incentives and fees to keep price stable
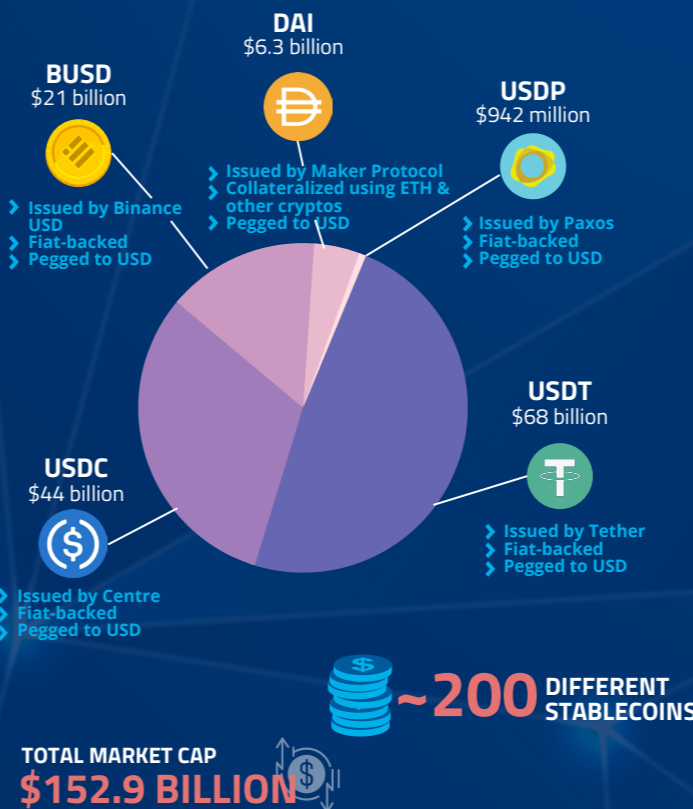
USES FOR STABLECOINS

REMITTANCES [3]
Enable sending money abroad at minimal cost. Remittances to low and middle income countries were estimated at $589 billion for 2021

DECENTRALIZED FINANCE (DeFi)
Currency with which DeFi applications are built, spanning across a range of alternative financial services

COMMERCIAL TRANSACTIONS
Enable low-cost, cross-border, and direct payments with immediate settlement and currency conversions

TRADING
A tool to access crypto trading platforms without having to hold fiat directly or incur fees and frictions from the traditional banking system

FINANCIAL INSTITUTIONS
Increase efficiencies and decrease costs with instant fund transfers between in-house accounts

CORPORATE TREASURIES
Improve liquidity management with efficient and transparent fund flows

Stablecoins enable the internet of value, where sending money becomes as easy as sending an email

TOP 5 STABLECOINS [2]
by Market Cap

DAI $6.3 billion

BUSD $21 billion
➤ Issued by Binance USD
➤ Fiat-backed
➤ Pegged to USD

➤ Issued by Maker Protocol
➤ Collateralized using ETH & other cryptos
➤ Pegged to USD

USDP $942 million
➤ Issued by Paxos
➤ Fiat-backed
➤ Pegged to USD

USDC $44 billion
➤ Issued by Centre
➤ Fiat-backed
➤ Pegged to USD

USDT $68 billion
➤ Issued by Tether
➤ Fiat-backed
➤ Pegged to USD

~200 DIFFERENT STABLECOINS

TOTAL MARKET CAP
$152.9 BILLION

FOCUSES FOR REGULATION

OTHER ISSUES -
• Applicability of Howey Test to treat stablecoins as securities
• How to treat centralized vs. decentralized models
• Where reserves are held
• Insurance

➤ **RESERVES -** Ensuring adequate quality and amount of reserves to back stablecoins in circulation, including third party attestations

➤ **REDEMPTION POLICY -** Timeframe, cost, and ease (e.g., what platform to use and any fees to redeem funds)

➤ **FINANCIAL STABILITY -** Preventing disruptions to the current banking system (e.g., bank runs)

➤ **CONSUMER & INVESTOR PROTECTIONS -** Ensuring redeemabilty of stablecoins and limiting losses

➤ **RISKS OF ALGORITHMIC STABLECOIN STRUCTURES -** Given that there may be no collateral

MAJOR GLOBAL REGULATIONS

Markets in Crypto Assets (MiCA) [4]
Crypto regulation in the EU, covering stablecoins

Principles for Financial Market Infrastructures (PFMIs) [6]
Application of PFMIs to systemically important stablecoin arrangements and relevant entities

Financial Stability Board (FSB) [5]
Recommendations for Global Stablecoin Arrangements

New York Department of Financial Services (NYDFS) [7]
Guidance on Issuance of US Dollar-Backed Stablecoins

There is legislation in the works to prohibit algorithmic stablecoins and highlight their risks

[1] https://www.gemini.com/cryptopedia/what-are-stablecoins-how-do-they-work#section-algorithmic-stablecoins
[2] https://coinmarketcap.com/charts/ (October 19, 2022)
[3] https://www.knomad.org/sites/default/files/2021-11/Migration_Brief%2035_1.pdf
[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593
[5] https://www.fsb.org/wp-content/uploads/P131020-3.pdf
[6] https://www.bis.org/cpmi/publ/d206.pdf
[7] https://www.dfs.ny.gov/industry_guidance/industry_letters/il20220608_issuance_stablecoins

GBBC

BLOCKCHAIN FOR TAXATION #1

Blockchain technology enables transparency and trust between governments and citizens, including truthful reporting of tax data

PROBLEM — ① With limited visibility on tax payments, countries fail to collect revenue owed to them and lose over **$427B** in taxes per year

Revenue Diversion & Tax Evasion

Through Legal & Illegal Means

From Multinational Corporations & Private Wealth

Higher income countries lose more money, but **lower income countries suffer disproportionate financial effects***

Effects on public services can be significant

	Total revenue loss per year	Average tax revenue loss as % of total tax revenue	Average tax revenue loss as % of health expenditure
Lower income countries	$45B	5.8%	52.4%
Higher income countries	$382B	2.5%	8.4%

*Aligned with January 2021 World Bank income classifications

SOLUTION — ② **Traceable revenue** improves accountability, bringing a **holistic view** of taxpayer obligations and corresponding payments

Certainty for taxpayer and administrator that taxable event occurred, authentication of actors and data to assess tax implications

Clear and simple processes to monitor and administer compliance with tax obligations

Data immutability and transparency to empower the tax function and support better policy design

Reduced data silos to align tax requirements with other government services (e.g., trade, social services, justice, welfare distribution)

Tax Authorities Can...
- Join decentralized trust networks
- Oversee real-time tax collections
- Make decisions on tax events as they occur
- Increase trust from citizens with accountability

TAX AUTHORITIES EXPLORING BLOCKCHAIN ③

Blockchain ensures data is not manipulated to benefit tax processes, law, and policy

Balancing privacy and transparency improves data sharing across jurisdictions and functions

Federal Administration of Public Revenue of Argentina

Finnish Tax Administration

Estonian Tax and Customs Board

Dutch Tax & Customs Administration

Panama General Revenue Directorate ④

Federal Tax Authority of Abu Dhabi

Internal Revenue Service of Chile

Norwegian Tax Administration

Her Majesty's Revenue & Customs

State Taxation Administration of China

Federal Tax Revenue of Brazil**

Nigerian Federal Inland Revenue Service & State Board of Internal Revenue

Swedish Tax Agency

Revenue Department of Thailand

Kenya Revenue Authority ⑤

**Infrastructure also adopted for customs by countries in the Mercosur free trade agreement (Argentina, Brazil, Paraguay, Uruguay)

① https://taxjustice.net/reports/the-state-of-tax-justice-2020/   ② GBBC GSMI 2.0 Report (November 2021)
③ https://www.ciat.org/blockchain-in-tax-administrations/?lang=en   http://news.bloombergtax.com/daily-tax-report-international/how-global-tax-administrations-are-using-blockchain-technology
④ https://kraemerlaw.com/en/articles/crypto-and-fintech-regulations-are-soon-to-be-in-panama/   ⑤ https://www2.deloitte.com/content/dam/Deloitte/ke/Documents/tax/KE_Article_Tax_Administration_Going_Digital.pdf

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GSMI FACT CARD SERIES

BLOCKCHAIN FOR TAXATION

Blockchain for Taxation #1 provides an overview of how blockchain technology can increase transparency and trust between governments and citizens. Truthful tax data reporting and a comprehensive view of taxpayer obligations and corresponding payments can bring significant benefits, and many global tax authorities are already exploring blockchain solutions.

Blockchain for Taxation #2 provides an overview of the key components necessary for a blockchain-based tax system, including quality data and how jurisdictions can benefit.

Blockchain for Taxation #3 provides an overview of proposed models of solutions to transition from traditional to distributed systems, where Artificial Intelligence, in combination with blockchain, can bring several synergies.

BLOCKCHAIN FOR TAXATION #2

①

Digital Identity is Key!

Jurisdictions can benefit from **increased tax collections** and reliability

>>> Revenue to develop economies, supporting **functional and inclusive societies**
>>> Blockchain to improve **efficiencies**
>>> Transparency and accountability to foster
   > **Better rules, policy & decision making**
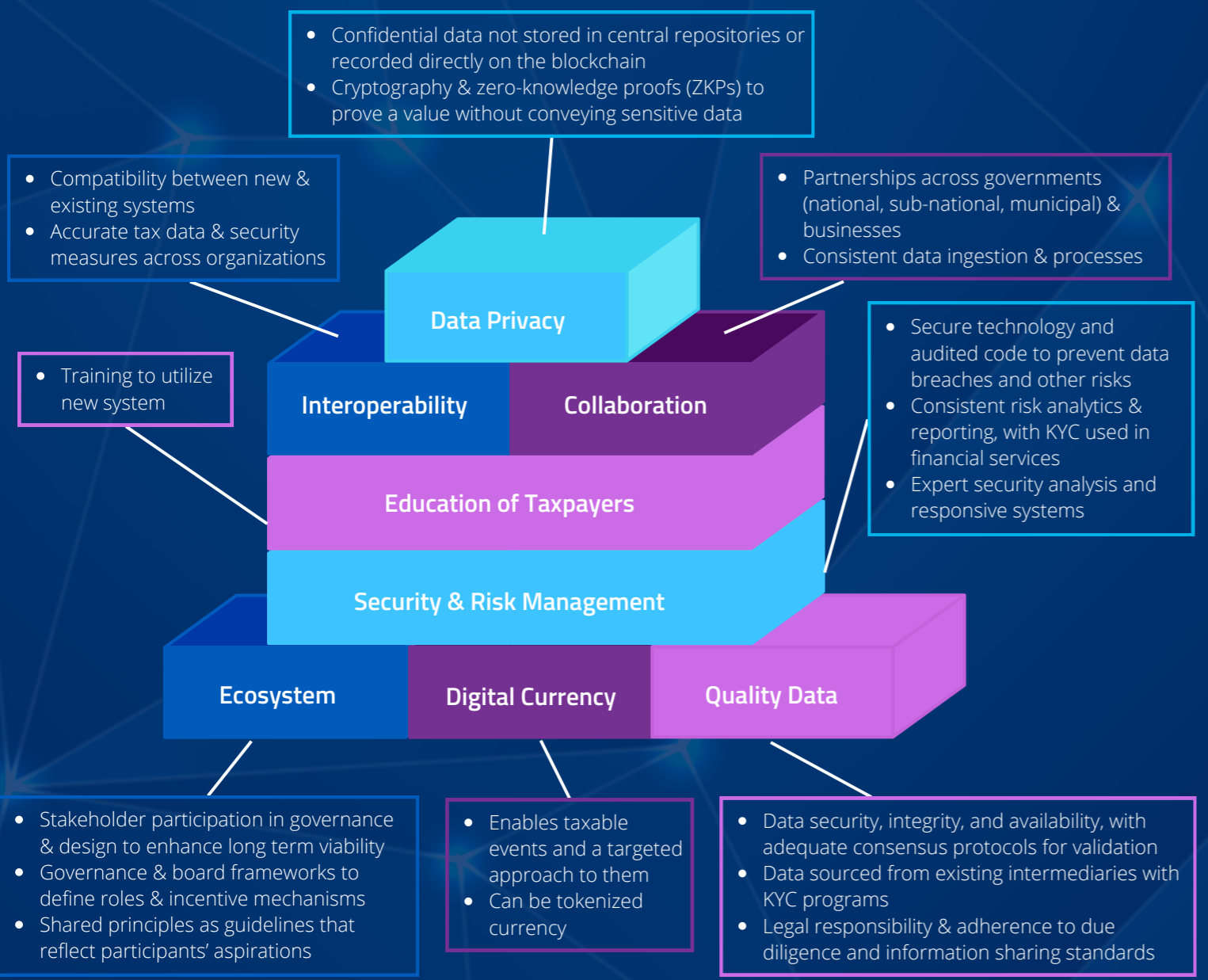   > **Trust in government**

1. **Enables** increased transparency
2. **Issued** by a government authority
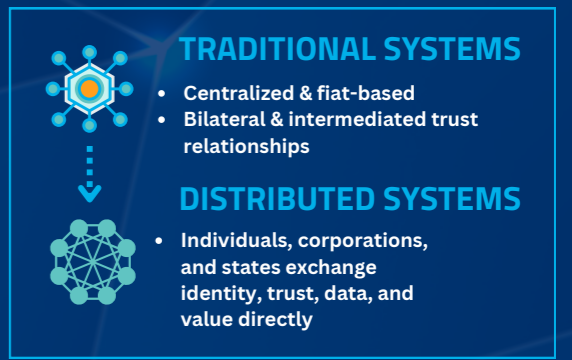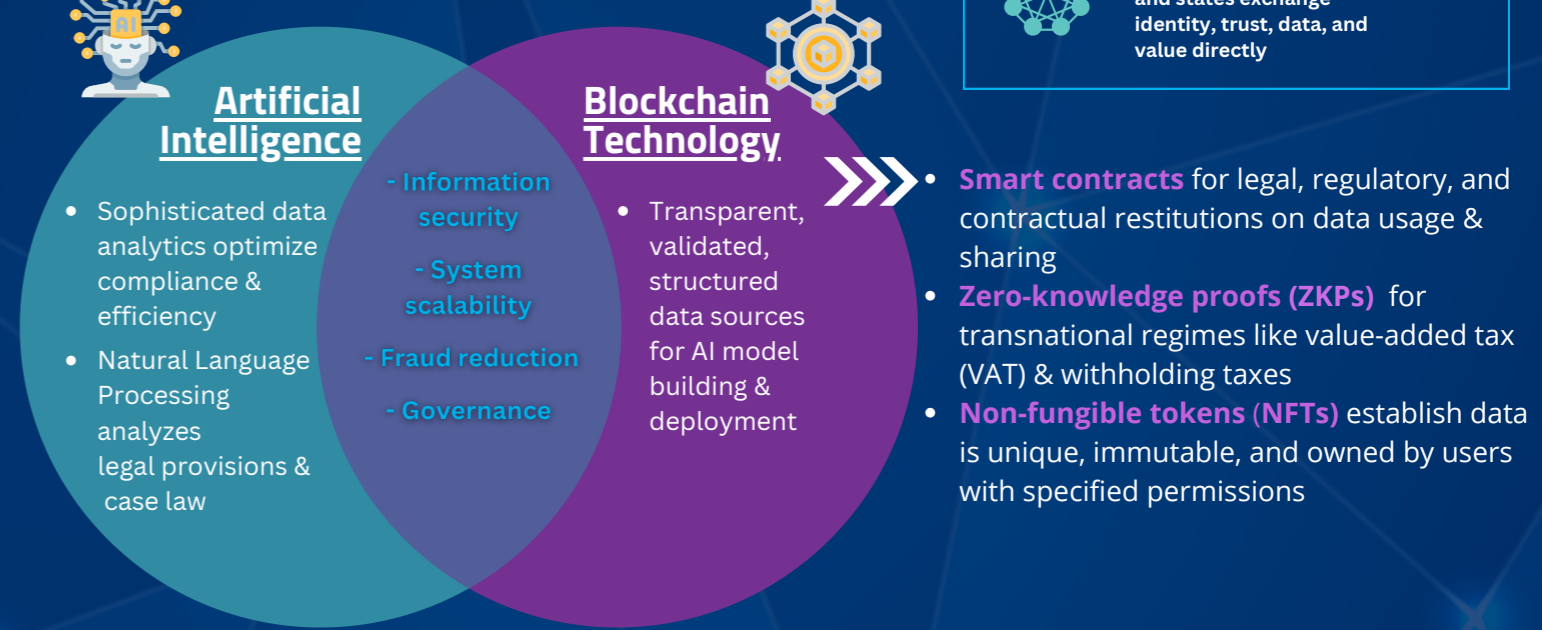3. **Represents** an external entity (e.g., individual, organization, asset)

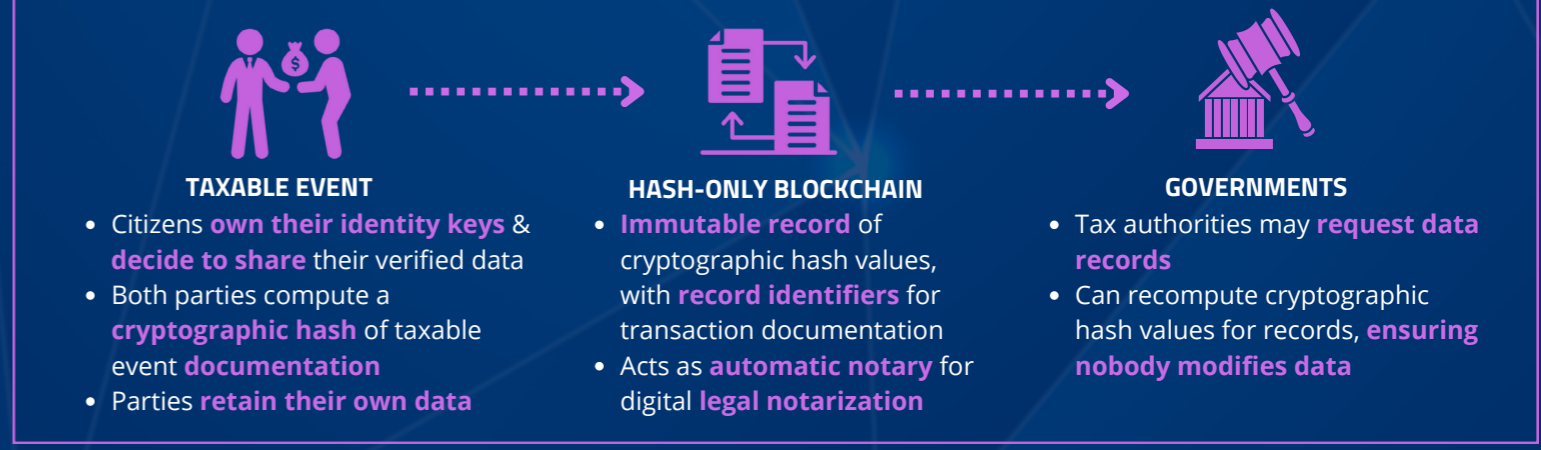## COMPONENTS OF A BLOCKCHAIN-BASED TAX SYSTEM

- Confidential data not stored in central repositories or recorded directly on the blockchain
- Cryptography & zero-knowledge proofs (ZKPs) to prove a value without conveying sensitive data

- Compatibility between new & existing systems
- Accurate tax data & security measures across organizations

- Partnerships across governments (national, sub-national, municipal) & businesses
- Consistent data ingestion & processes

- Training to utilize new system

- Secure technology and audited code to prevent data breaches and other risks
- Consistent risk analytics & reporting, with KYC used in financial services
- Expert security analysis and responsive systems

Data Privacy

Interoperability

Collaboration

Education of Taxpayers

Security & Risk Management

Ecosystem

Digital Currency

Quality Data

- Stakeholder participation in governance & design to enhance long term viability
- Governance & board frameworks to define roles & incentive mechanisms
- Shared principles as guidelines that reflect participants' aspirations

- Enables taxable events and a targeted approach to them
- Can be tokenized currency

- Data security, integrity, and availability, with adequate consensus protocols for validation
- Data sourced from existing intermediaries with KYC programs
- Legal responsibility & adherence to due diligence and information sharing standards

① GBBC GSMI 2.0 Report (November 2021)

BLOCKCHAIN FOR TAXATION #3

①

PROPOSED MODELS OF SOLUTIONS

SYNERGIES WITH AI & BLOCKCHAIN

Artificial Intelligence

- Sophisticated data analytics optimize compliance & efficiency
- Natural Language Processing analyzes legal provisions & case law

- Information security
- System scalability
- Fraud reduction
- Governance

Blockchain Technology

- Transparent, validated, structured data sources for AI model building & deployment

TRADITIONAL SYSTEMS
- Centralized & fiat-based
- Bilateral & intermediated trust relationships

DISTRIBUTED SYSTEMS
- Individuals, corporations, and states exchange identity, trust, data, and value directly

>>>
- **Smart contracts** for legal, regulatory, and contractual restitutions on data usage & sharing
- **Zero-knowledge proofs (ZKPs)** for transnational regimes like value-added tax (VAT) & withholding taxes
- **Non-fungible tokens (NFTs)** establish data is unique, immutable, and owned by users with specified permissions

IMMUTABLE NOTARIZATION ON BLOCKCHAIN

TAXABLE EVENT
- Citizens **own their identity keys** & **decide to share** their verified data
- Both parties compute a **cryptographic hash** of taxable event **documentation**
- Parties **retain their own data**

HASH-ONLY BLOCKCHAIN
- **Immutable record** of cryptographic hash values, with **record identifiers** for transaction documentation
- Acts as **automatic notary** for digital **legal notarization**

GOVERNMENTS
- Tax authorities may **request data records**
- Can recompute cryptographic hash values for records, **ensuring nobody modifies data**

LEGAL AND REGULATORY CONSIDERATIONS

- **New rules** for new issues
- **Balancing automation** with human review & adjudication
- **Addressing legal ambiguity** (e.g., binary objective criteria to trigger legal presumptions)
- **Cross-border coordination** (e.g., smart contracts to attribute tax treatment to adequate jurisdiction)

- **Compliance with GDPR & other data laws** (e.g., ZKPs & advanced cryptography for privacy)
- **Alignment with competition law** for different DLT systems & validation mechanisms, preventing use of commercially sensitive data for illegal price setting & anti-competitive behavior
- **Protecting taxpayer rights** (e.g., dispute resolution, burden of proof, identity management & digital inclusiveness)

① GBBC GSMI 2.0 Report (November 2021)

NEXT STEPS/GSMI 4.0

Since the launch of GSMI, blockchain technology and digital assets continue to mature and expand across industries globally. While the space changes rapidly, the industry's ability to adapt remains constant. GSMI aims to catalogue global activity, both to provide a comprehensive and holistic outlook, and to help address counterproductive fragmentation. For the inaugural GSMI release in 2020, areas ripe for additional attention were highlighted. Two years later, some of those challenges remain at the top of our list, while new developments introduce areas of additional focus for years to come.

COMMON REGULATORY APPROACH

There has been progress toward harmonization of regulatory approaches around the world in certain aspects, with international fora and regulatory bodies (e.g., principles laid out by G20 countries, Financial Stability Board, and Financial Action Taskforce), as well as collaborative projects (e.g., joint CBDC pilots under the Bank for International Settlements involving interoperability). Yet there are still differences in regulatory approaches across jurisdictions that can lead to widespread fragmentation – both globally and within countries. This is a perennial pain point for regulators and innovators navigating a lack of regulatory clarity and consistency. These differences in approaches have also led to regulatory arbitrage, and at times, abuses where entities incorporate in jurisdictions with less regulatory requirements and carry out practices that ultimately hurt consumers, investors, and the industry. In these instances, the most vulnerable and lower income communities are disproportionately affected.

There is still room for improvement toward a common strategy that would benefit all. Meaningful efforts have been made to mitigate information silos and foster nimble, principles-based guidance that is platform-agnostic. Moreover, it is a positive step that much of existing regulation focuses on digital assets, as opposed to the underlying technology. We hope the interactive map of regulatory developments continues to capture the progress being made on this front, providing a holistic view of the global state of affairs, and fostering shared learnings.

TAXONOMY

Shared language is paramount for meaningful collaborative developments that will serve as the foundation for scale. As new developments arise and definitions evolve, it is important to maintain tools like this taxonomy to ensure continued shared understanding and mitigate silos. Over time, it will be necessary to add new terms, adjust the meaning of existing terms, and also expand upon terminology specific to sectors that are ripe for disruption.

TECHNICAL STANDARDS

Standardization on the technical front is also another key consideration for collaborative developments that ensures adequate functionality across the board for these innovations. When there is a solution that works and gains certain acceptance by users, this often even precedes regulatory developments. Hence the outcomes of technical standards bodies in the space have been categorized as governance through standards/best practices, technical requirements, and regulatory compliance. There is still much progress to make with respect to standardization for blockchain and digital assets, as technical standards bodies would still benefit from more harmonization. This resource will still evolve as the industry evolves, and we continue to welcome insights form experts in the standardization space for future updates.

LANDSCAPE

The blockchain and digital assets landscape continues to add new stakeholders, while existing stakeholders mature to grow in scale, consolidate, or cease to exist, often when poorly managed or when affected by ripple effects at times of contagion. There have been a series of industry shakeouts where surviving stakeholders have withstood the test of time. Hence the panorama of key stakeholders, and even the main roles they fall under, will evolve. The supporting infrastructure – underlying trading, enterprise scale needs, mining and staking, and other blockchain and digital asset functions – will also develop further. In addition, the specific applications at the startup level are always changing, as well as the funds making allocations in the space. We aim for this landscape to evolve accordingly.

EDUCATION

Education remains paramount. The development of thoughtful, digestible, and nuanced educational resources and efforts aimed at informing those crafting laws and regulations that touch blockchain technology and digital assets is critical. Increasing interest in NFTs, Web 3.0, and the Metaverse has driven attention toward the industry, but the quality of understanding by stakeholders remains inadequate. Decision makers must be better educated with thoughtful, accurate, digestible information. We hope our catalogue of universities and other accredited educational institutions can expand to include more courses across geographies, serving as a tool for both students and professionals seeking to improve their understanding of the space, as well as educators and researchers seeking to collaborate.

MULTI-STAKEHOLDER ENGAGEMENT

The best solutions to complex global problems are achieved when stakeholders from myriad backgrounds communicate, bringing their different perspectives and local knowledge to the forefront and challenging each other in unprecedented ways. Blockchain and digital assets, through democratization and transparency of data, have the potential to address many aspects of the world's most pressing needs, as captured in the UN Sustainable Development Goals. We hope that the resources contained in GSMI can support the call to action for collaborative developments, giving voice to all those who need to be represented in the global community.

Regulatory frameworks based on input from actors in the public sector, private sector, and civil society have a better chance of effectively addressing these concerns while encouraging thoughtful innovation. In their efforts to identify a rational path forward, regulators should prioritize engaging stakeholders from varied backgrounds and jurisdictions. Innovators should engage with users from diverse communities. Corporations should seek opportunities for growth through collaboration. Cross-industry, multi-stakeholder, and multi-jurisdiction engagement is the way to build the robust frameworks needed to ensure resilience for the future.

SUSTAINABILITY & THE GREEN ECONOMY

Blockchain and digital assets have already demonstrated their promise in delivering outcomes to address climate change, through transparency and accountability in carbon markets, while incentivizing sustainable habits by connecting individual behaviors with their ultimate impacts. There is a myriad of opportunity when it comes to inclusion and social good, and ultimately the business opportunities that can be capitalized. We hope that the sustainability-minded resources contained in GSMI will be made more robust as these innovations progress, and ultimately foster necessary dialogue among key decision makers.

THANK YOU TO EVERY AUTHOR, EDITOR, AND SUPPORTER.WE APPRECIATE ALL OF YOU.

SEE YOU IN 2023 FOR GSMI 4.0!
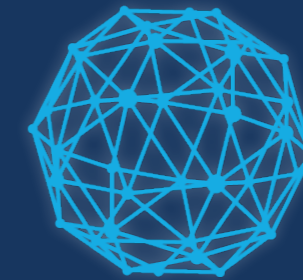
EXPLORE INTERACTIVE MAP AND LISTS ON THE GSMI PAGE

GBBCouncil.org/GSMI

CONTACT GBBC's GSMI

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SECTION IX

APPENDIX

TABLE OF CONTENTS

TECHNICAL STANDARDS MAPPING

* Proposed outcome as defined by the user group of a standards body, which in this case refers to persons using blockchain for fiduciary or enterprise purposes

** Topic as relevant to blockchain activity

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
Association for Digital Asset Markets (ADAM)	UNITED STATES	The Association for Digital Asset Markets (ADAM) is a private, non-profit, membership-based association of firms operating in the digital asset markets.ADAM considers itself a "self-governing association." It has released a code of conduct intended to inform market participants on best practices and to complement, not replace, existing regulation, part of a long-term effort to define and promote ethical conduct by all digital asset market participants.	Conduct/Governance	Compliance and risk management; market ethics; conflicts of interest; transparency and fairness; market integrity; custody; information security and business continuity; anti-money laundering and countering the financing of terrorism	Digital asset markets
Baseline Protocol	GLOBAL	The Baseline Protocol is an open-source initiative that combines advances in cryptography, messaging, and blockchain to execute secure and private business processes at low cost via the public Ethereum Mainnet.The protocol will enable confidential and complex collaboration between enterprises without leaving any sensitive data on-chain.	Conduct/Governance Technical	Data; Tokens; Security; Zero Knowledge Proofs (Cryptography)	Open source protocols
Blockchain in Transport Alliance (BiTA)	USA	The Blockchain in Transport Alliance (BiTA) Standards Council is seeking to develop and embrace a common framework and standards from which transport, logistics, and supply-chain participants can build blockchain applications. It is a collaborative effort among representatives of the commerce ecosystem (carriers, suppliers, shippers, customers and other stakeholders) to develop the pro-competitive, open source, and royalty-free standards for blockchain/web3 implementations that will maximize the efficiency of the global supply chain for the benefit of all.	Conduct/Governance	Interoperability; blockchain and web3 requirements; global supply chains	Transport and commerce ecosystem
British Standards Institution (BSI)	UK	The British Standards Institution (BSI) is the national standards body of the United Kingdom.It aims to share knowledge, innovation, and methodologies to help people and organizations make excellence a habit. BSI provides support to clients on blockchain project requirements to assist in leveraging the benefits of this technology.	Regulatory	DLT Requirements	All industries

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
Blockchain Industrial Alliance (BIA)	ESTONIA	The Blockchain Industrial Alliance (BIA) seeks to promote cross-blockchain transactions and interconnectivity. The goal of this alliance is to create a globally accepted standard for connecting blockchains and to bring innovations together.	Conduct/Governance	Interoperability, Smart Chains, Blockchain Platforms	Blockchain technology
Blockchain Industry Group (BIG)	UNITED STATES	The Blockchain Industry Group (BIG) is dedicated to the advancement and adoption of blockchain technologies through the development and promotion of blockchain standards, education, certifications and collaboration.	Conduct/Governance Technical	DLT requirements; Governance; Education	Blockchain technology
British Blockchain Association (BBA)	UK	The British Blockchain Association (BBA) is a not-for-profit organization that promotes the adoption of Evidence-Based Blockchain and other Distributed Ledger Technologies (DLT) across public and private sectors. The BBA is home to the UK's National Blockchain Roadmap VISION 2030, UK's DLT Excellence Standards Framework, Centre for Evidence Based Blockchain (CEBB), The Journal of the British Blockchain Association (JBBA), Blockchain Associations Forum (BAF), Student Forum (BBA SF) and the Industry Advisory Think-Tank.	Conduct/Governance	Blockchain applications	UK blockchain ecosystem
Chamber of Digital Commerce	UNITED STATES	The Chamber of Digital Commerce is set up to promote the acceptance of blockchain and digital assets, with particular focus on financial inclusion, economic freedom, and prosperity. It has released the National Action Plan for Blockchain, proposing aspects for a U.S. approach blockchain technology with clearly articulated support to encourage private sector development and innovation required of emerging industries.	Conduct/Governance	Accounting; tax; digital tokens; mining; anti-money laundering; National Action Plan (US)	Blockchain and digital assets
China Communications Standards Association (CCSA)	CHINA	The China Communications Standards Association (CCSA), founded by the Chinese Ministry of Information Industry, is a Chinese professional standards organization responsible for developing communications technology standards. For blockchain, the most notable developments include: 1. Blockchain Innovation and Intellectual Property Development White Paper, which includes 33 blockchain standards. 2. Financial Distributed Ledger Technology Application Guideline, which is the first financial blockchain international standard project led by China. It was approved in 2020. China wants to apply this standard as a framework to contribute to the planning and layout of the financial blockchain international standards system, as well as create sub-standards such as reference frames, risk control, security and privacy protection, and financial blockchain business specifications in various fields.	Technical Regulatory	Communication Technology	Telecommunications
China Electronics Standardization Institute (CESI)	CHINA	The China Electronics Standardization Institute (CESI), which operates under the Ministry of Industry and Information Technology, works with standardization, conformity assessment and measurement activities in the field of electronics and information technologies. In the past couple of years, CESI has released a vision to introduce three blockchain standards on smart contracts, privacy and deposits in a bid to better guide the development of the blockchain industry in the country. CESI released a White Paper on the Integration and Development of Blockchain and Industrial Internet on October 19, 2021. According to the "Made in China 2025" national strategic plan and the current development of industrial blockchain in China, the White Paper aims to accelerate the adoption of industrial blockchain applications by making a standard system for industrial blockchain in China.	Regulatory	Tokens; Security; smart contracts; privacy; deposits	Electronics and information technology

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
China Food Association - Standardization Technical Committee	CHINA	The Standardization Technical Committee is responsible for verifying all drafted standards and making development strategies for the China Food Association.It updated management requirements for blockcain applications for food traceability (under released).	Conduct/Governance Regulatory	Food traceability	Food
COALA	GLOBAL	COALA is a unique, collaborative, global and multidisciplinary community that brings together individual experts in the decentralized ecosystem to explore the implications and deployment of blockchain technologies at the nexus of our evolving social and economic order in the 21st century. Working groups are composed of leading academics, lawyers, economists, protocol architects, technologists, and entrepreneurs.Experts in the COALA community cross-pollinate and collaboratively work on the deployment of blockchain-based legal and technical frameworks, standards and applications alongside governance policies that enable innovation and evolution of systems and networks for social good.	Technical Regulatory	Blockchain-based legal and technical frameworks, standards, and applications; Legality; decentralized autonomous organizations (DAOs); governance; identity & privacy; intellectual property; regulation technoloy; ethics; smart contracts; crypto-equity	Blockchain technology
DFM Data Corp. (DFMDC)	UNITED STATES	Dynamic Freight Management (DFM) Data Corp.(DFMDC) is a clearinghouse for the freight ecosystem.DFMDC's technology platform harmoniously synchronizes ISO-standardized data through a proprietary information exchange with ISO 8000-119. DFMDC deploys a semantic data layer that allows hundreds of siloed technologies to communicate milestone freight status updates with one another.	Conduct/Governance Technical	Data; freight status updates; transport unit identifiers	Freight ecosystem
Digital Container Shipping Association (DCSA)		The Digital Container Shipping Association (DCSA) was created to develop vendor-neutral and technology-agnostic standards that facilitate the interoperability of information technology solutions across the container shipping industry and foster non-competitive business practices. It has developed standards for electronic bills of lading using blockchain.	Conduct/Governance Technical	Cross-technology interoperability; information technology; non-competitive business practices	Container shipping industry
Enterprise Ethereum Alliance (EEA)	USA	The Enterprise Ethereum Alliance (EEA) builds, promotes and broadly supports Ethereum-based technology methodologies, standards and a reference architecture. The objective is to put Ethereum to work for today's business.	Conduct/Governance Technical	Interoperability; security; cross chain, NIST-compatible Ethereum; enterprise applications	Enterprise ethereum ecosystem
European Blockchain Association (EBA)		The European Blockchain Association (EBA) serves as a neutral body to aggregate and coordinate blockchain activities throughout Europe and to provide Non-European parties with a direct API into the European blockchain ecosystem. The objective is to empower the European blockchain ecosystem by supporting blockchain-related activities of European corporations, startups, venture capitalists, and scientific institutes.	Conduct/Governance Technical	Blockchain applications	European blockchain ecosystem

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
European Committee for Standardization (CEN)	BELGIUM	The European Committee for Standardization (CEN) provides a platform for the development of European standards and other technical documents in relation to various products, materials, services and processes.	Regulatory	Defense & Security, Quantum Technologies, Artificial Intelligence, Smart Grids, Environment and Sustainability, Cybersecurity, Digital Society,	Technical field in Europe
European Telecommunications Standards Institute (ETSI)	FRANCE	The European Telecommunications Standards Institute (ETSI) provides the opportunities, resources and platforms to understand, shape, drive and collaborate on globally applicable standards that can promote interoperability, security, and competitive advantage. It has formed an industry specification group on blockchain in 2018, Permissioned Digital Ledger, which has published reports on topics including smart contract specifications and requirements, data management, and interoperability.	Conduct/Governance Technical	Permissioned distributed ledgers; smart contracts; data; interoperability	Telecommunications; ICT systems across all sectors of industry and society
GBBC Digital Finance (GDF)	SWITZERLAND	GBBC Digital Finance (GDF) is an industry membership body that promotes the adoption of best practices for cryptoassets and digital finance technologies, through the development of conduct standards, in a shared engagement forum with market participants, policymakers and regulators.GDF merged with the Gloal Blockchain Business Council (GBBC) in 2022.	Conduct/Governance Regulatory	DLT requirements; taxonomy; custody; Environmental, Social, Governance (ESG); stablecoins; market integrity; tokens and token issuance; funds; regulation; sanctions; know-your-customer (KYC)/anti-money laundering/countering terrorism financing (KYC/AML/CTF); tax treatment; decentralized finance (DeFi); private markets; digital currency; security tokens; trading platforms; interVASP (virtual asset trading platform) messaging standards; registration; rating websites; global financial institutions	Finance & digital assets
Global Digital Asset & Cryptocurrency Association (DCA)	UNITED STATES	The Global Digital Asset & Cryptocurrency Association (DCA) is a global self-regulatory association for the digital asset & cryptocurrency industry.It was established to guide the evolution of digital assets, cryptocurrencies, and the underlying blockchain technology within a regulatory framework designed to build public trust, foster market integrity and maximize economic opportunity for all participants.	Conduct/Governance Technical Regulatory	Digital assets; cryptocurrencies; blockchain	Digital asset and cryptocurrency industry
Global Standards for Business Communication (GS1)	BELGIUM	GS1 develops global standards for business communication, allowing entities to identify, capture, and share information smoothly through a common language. Best known for the barcode, GS1 aims with its standards to improve the efficiency, safety and visibility of supply chains across physical and digital channels.Blockchain technology is covered in certain standards, with the objective to improve interoperability and data quality. GS1 reporting recommends the use of existing data standards for enterprise blockchain implementations.	Conduct/Governance Technical	Data; traceability; supply chains; enterprise blockchain	Identification and structured data for business communication

ENTITY	GEOGRAPHY	PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
Government Blockchain Association (GBA)	UNITED STATES	The Government Blockchain Association (GBA) brings together people and organizations with blockchain-based solutions to problems that are traditionally addressed by government entities. It provides educational and networking opportunities focused on blockchain adoption, as well as resources for development and deployment. It facilitates collaborative workflows between technologists, public policymakers, and application specialists.	Conduct/Governance	Blockchain adoption; education; smart cities; governance/legal/reg/compliance; digital economy; sciences/healthcare/tech	Blockchain ecosystem
Hyperledger Foundation	USA	Hyperledger, hosted by the Linux Foundation, is an open-source community focused on developing a suite of stable frameworks, tools and libraries for enterprise grade blockchain deployments. It serves as a neutral home for various distributed ledger frameworks including Hyperledger Besu, Burrow, Fabric, Sawtooth, Iroha, and Indy, as well as tools such as Hyperledger Caliper and libraries such as Hyperledger Ursa. The objective is to advance cross-industry blockchain technologies.	Conduct/Governance Technical	Interoperability; tokens; enterprise grade blockchain deployments	Enterprise frameworks and tools for blockchain
Institute of Electrical and Electronics Engineers (IEEE)	USA	The purpose of the Institute of Electrical and Electronics Engineers (IEEE) is a professional association for electronic and electrical engineering. IEEE promotes the development and application of electrotechnology and allied sciences for the benefit of humanity, the advancement of the profession and the well-being of its members. The IEEE Blockchain Initiative is designed as a hub for all blockchain activities within IEEE, which include conferences, educational materials and publications, and standards.	Conduct/Governance Technical	"Internet of things (IoT); cryptocurrency exchange and payment; tokens; energy; digital assets - Blockchain in Healthcare (IEEE P2418.6) - Agriculture (IEEE P2418.3) - Blockchain Governance (IEEE P2145 & IEEE P3212)	Electrotechnology and allied sciences; electronic and electrical engineering
Institute of International Finance (IIF) - Taskforce on Scaling Voluntary Carbon Markets (TSVCM)	USA AND GLOBAL OFFICES OF IIF	The Taskforce on Scaling Voluntary Carbon Markets (TSVCM) is a private sector-led initiative working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement.It is led by the Institute of International Finance (IIF). The Taskforce's unique value proposition is to bring all parts of the value chain to work intensively together and to provide recommended actions for the most pressing pain-points facing voluntary carbon markets, bringing credit level integrity in voluntary markets. TSVCM has recognized the role of blockchain to increase the integrity of carbon markets, make offset markets more efficient, facilitate increased access and therefore demand, unlock supply, and clarify the relationship between voluntary and compliance carbon markets.	Regulatory	Core Carbon Principles (CCPs), voluntary carbon markets; credit level integrity, legal principles & contracts	Voluntary carbon markets
International Association for Trusted Blockchain Applications (INATBA)	BELGIUM	The International Asscociation for Trusted Blockchain Applications (INATBA) serves as the bridge between public and private entities in the blockchain ecosystem.It facilitates ongoing constructive dialogue between public and private developers/users with regulators and policymakers, to ultimately foster global convergence of regulatory approaches. It promotes blockchain adoption across diverse fields including law, finance, and education	Conduct/Governance Technical	Blockchain adoption; law; finance; education	Blockchain ecosystem
International Chamber of Commerce (ICC)	FRANCE	The International Chamber of Commerce (ICC) is a global business organization with the objective of making business work for everyone, enabling business to secure peace, prosperity, and opportunity for all. It launched the Digital Standards Initiative (DSI) to enable interoperability between blockchain and other technology platforms in the global trade space. The Digital Trade Standards Initiative covers blockchain to support a globally harmonized digital trade environment.	Conduct/Governance Technical	Digital trade; interoperability	Global digital trade

ENTITY	GEOGRAPHY	PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
International Electrotechnical Commission (IEC)	SWITZERLAND	The International Electrotechnical Commission (IEC) promotes quality infrastructure and international trade in electrical and electronic goods, with the ultimate goal of promoting safety and efficiency. It launched a study group in collaboration with ISO/TC 307 to standardize blockchain.	Conduct/Governance Technical	Internet of things (IoT), Infrastructure Development, Sustainable energy	Electrical and electronic goods; Energy
International Emissions Trading Association (IETA)	CANADA	International Emissions Trading Association (IETA) is a nonprofit business organization to establish an international framework to support the trade of greenhouse gas emission reductions. Its emissions trading regime is designed to foster real and verifiable emission reductions, with both economic efficiency adn environmental and social responsibility. It currently focuses on advocating for markets to effectively price carbon and deliver net-zero targets to meet the Paris Agreement's goals for climate protection. IETA has formed a task group on digital climate markets that contemplates the increasing role of blockchain and tokens, as digital twins of issued carbon credits, which must be permanently removed from circulation once the underlying carbon credits are retired. It has drafted guidelines around the use of blockchain in voluntary carbon markets.	Conduct/Governance Technical	DLT requreiments; tokens; voluntary carbon markets	Emissions reductions
International Organization for Standardization (ISO)	SWITZERLAND	The International Organization for Standardization (ISO) is an independent, non-governmental, international organization that develops standards to ensure the quality, safety and efficiency of products, services, and systems. The Open Systems Interconnection model (OSI) has covered the topics of digital currencies, interoperability (between blockchain and DLT systems and overall), foundations, security/privacy/identity, smart contracts and applications, governance, use cases, within ISO/TC 307. ISO-14064 also covers blockchain topics.	Conduct/Governance Technical	Security; privacy; identity; governance; smart contracts; digital currencies; interoperability; foundations; applications	International quality standards
International Telecommunication Union - Telecommunications Standardization Sector (ITU-T)	SWITZERLAND	The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technology (ICT).Within the ITU, the Telecommunication Standardization Sector (ITU-T) ensures the efficient and timely production of standards covering all fields of telecommunications and information communication technology (ICTs) on a worldwide basis, and defines tariff and accounting principles for international telecommunication services. The focus group on Application of Distributed Ledger Technology was established in 2017.	Conduct/Governance	Security; IoT; identity; DLT requirements; mobile payment security; digital financial inclusion; digital assets including digital currency;	Telecommunications
International Token Standardization Association (ITSA)	GERMANY	The International Token Standardization Association (ITSA) developed the International Token Identification Number (ITIN), which focuses on establishing an open market standard to identify cryptographic tokens. Its standard framework International Token Classification (ITC) categorizes cryptographic tokens based on their inherent characteristics and assigns them identifiers. In addition, ITSA also developed the International Token Database (TOKENBASE), which sets a standard for qualitative and quantitative approaches to analyze these tokens.	Technical	Tokens	Standards for cryptographic tokens

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
Internet Engineering Task Force (IETF)	USA	The purpose of the Internet Engineering Task Force (IETF) is to make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet. IETF has released a series of documents and expert commentaries covering a wide range of blockchain topics.	Conduct/Governance Technical	Cryptocurrency payment; Internet of Things (IOT); Security and Privacy	Internet standards
Internet Research Task Force (IRTF)	USA	The Internet Research Task Force (IRTF) aims to promote research for the evolution of the internet. Blockchain topics are covered by the Decentralized Internet Infrastructure Research Group which focuses on infrastructure services that can benefit from decentralization. The group also coordinates with other IRTF groups to explore cross-sector blockchain topics.	Conduct/Governance	Identity; digital assets	Internet infrastructure services
InterWork Alliance (IWA)	USA	The InterWork Alliance (IWA) is working to develop standards-based interworking specifications at the token and smart contract level, simplify and standardize multi-party exchanges, and build specifications and tools to define tokens and smart contracts in a platform-neutral way.IWA empowers organizations to adopt and use token-powered services in their day-to-day operations. It does not focus on underlying technology, as digital interchanges of value must work regardless of the underlying technology to grow at scale.Instead, IWA focuses on defining token/smart contract requirements, and developing taxonomies and definitions for tokenization and smart contracts for identified use cases such as carbon markets and debt/equity issuance.IWA merged with the Gloal Blockchain Business Council (GBBC) in 2021.	Technical	Interoperability; tokens (Token Taxonomy Framework); smart contracts (InterWork Framework); carbon markets; debt/equity issuance	Blockchain technology
Joint Technical Committee (JTC 1)	SWITZERLAND	The ISO and IEC Joint Technical Committee (JTC 1) for information technology is a consensus-based and voluntary international standards body. With respect to standardization for emerging technologies and innovations, JTC 1 intends to promote active cooperation among standards devellopment organization (e.g., ISO, IEC, ITU-T, fora, consortia, etc.) to avoid overlapping work. as a JTC 1 intitative, ISO and IEC also decided to form a Joint Advisory Group (JAG) Group on Emerging Technology and Innovation (JETI), with specified terms of reference to facilitate JTC 1 standards development for future emerging and innovation technologies.	Technical	Blockchain requirements; applications	Emerging and innovation technologies
Joint Working Group (JWG)	USA AND UK	The Joint Working Group (JWG), led by Global Digital Finance (GDF), the International Digital Asset Exchange Association (IDAXA), and the Chamber of Digital Commerce (CDC), identified the need for VASPs to adopt uniform approaches and establish common standards to enable them to meet their obligations resulting from the Financial Action Task Force (FATF) recommendations as they apply to affected entities.To tackle this, a cross-industry, cross-sectoral joint working group of technical experts was formed in December 2019 and a new technical standard developed by the group. The resulting InterVASP Messaging Standards (IVMS) created standards for the sharing of originator and beneficiary information on transactions in order to comply with the Travel Rule.	Conduct/Governance Regulatory	Financial Action Task Force (FATF) Travel Rule; sharing of originator and beneficiary information on transactions	Financial Action Task Force (FATF) Travel Rule compliance for virtual asset service providers (VASPs) and other obliged entities that engage in or provide covered virtual asset (VA) activities
Mobility Open Blockchain Initiative (MOBI)	USA	The Mobility Open Blockchain Initiative (MOBI) is a group of organizations that have joined a national committee focused on creating standards for blockchain technology. MOBI creates standards and builds Web3 infrastructure for connected ecosystem and IoT commerce, facilitating the new economy of movement. MOBI's Vehicle Identity Working Group (VIWG) aims to use DLT to make mobility safer, greener, cheaper and more accessible.	Conduct/Governance	Vehicle identity; usage-based insurance; electric vehicle grid integration; connected mobility and data; marketplaces; supply chain and finance; securitization and smart contracts	Blockchain and related technologies for mobility

ENTITY		PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
[National Blockchain and Distributed Ledger Technology Standardisation Technical Committee](#)	CHINA	China's National Blockchain and Distributed Ledger Technology Standardisation Technical Committee was established by the country's central government as a technical committee with the task of establishing nationwide blockchain standards. This committee is chaired by the vice-minister of the Ministry of Industry and Information Technology (MIIT) and comprised of members from political, industrial, academic and research organisations. This is a group of organizations that have joined a national committee focused on creating standards for blockchain technology.	Regulatory	Blockchain applications; DLT requirements; DLT terminology	Blockchain technology in China
[National Institute of Standards and Technology (NIST)](#)	UNITED STATES	National Institute of Standards and Technology (NIST) is a physical sciences laboratory and non-regulatory agency within the US Department of Commerce, with the mission to promote American innovation and industrial competitiveness. NIST research initiatives have investigated blockchain topics including use cases, applications and existing services, protocols, security guarantees, and cryptographic mechanisms including quantum-resistant public-key cryptographic algorithms. These intitiatives have also produced scientific papers, software for experimentation, and resources for other NIST endeavors related to blockchain, recognizing its potential for implementation across various systems including manufacturing supply chains, data registries, digital identification, and records management.	Conduct/Governance Technical	Blockchain applications and existing services; protocols; security; cryptography	Innovation and industrial competitiveness
[Organization for the Advancement of Structured Information Standards (OASIS) - OASIS Open](#)	UNITED STATES	The Organization for the Advancement of Structured Information Standards (OASIS) is a nonprofit, international consortium with the mission of promoting adoption of product-independent standards for information formats. The initiative OASIS Open sets standards for open collaboration, with open code and open standards, which are applicable for blockchain and other emerging technologies. It provides resources for open source projects to develop in a standardized manner, so as to obtain approval by international policies and procurement processes.	Conduct/Governance Technical	Open code; information formats; standardization of open source projects	Information standards for open source products
[Standardization Administration of the P.R.C.(SAC)](#)	CHINA	The Standardization Administration of the P.R.C. (SAC) exercises administrative responsibilities by undertaking unified management, supervision, and overall coordination of standardization work in China. It has established a national standards committee on blockchain. The SAC also represents China within the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and other international and regional standardization organizations.	Conduct/Governance Regulatory	DLT requirements	Health, Safety, and Security
[Standards Australia](#)	AUSTRALIA	Standards Australia coordinates standardization activities and facilitates the development of Australian standards. It established initiatives for global blockchain standardization efforts, managing the international Secretariat of the International Technical Committee for Blockchain Standards (ISO/TC 307) following ISO's approval of Standards Australia's proposal for new international blockchain standards.	Regulatory	Reference architecture; terminology: smart contracts, governance: privacy; security and identity; supply chain and trade facilitation: security evaluation of consensus models; data flow	Blockchain technology in Australia and internationally
[The Gold Standard (GS)](#)	SWITZERLAND	The Gold Standard (GS) is an international carbon offset standard, providing a voluntary carbon offset program with the aim of advancing the UN Sustainable Development Goals (SDGs) and benefit surrounding communities around projects. It has announced proposals to allow the creation of digital tokens representing carbon credits. Gold Standard, for example, is considering the use blockchain to improve impact data quality, reduce time and costs in the context of measurement, reporting, and verification (MRV). It has also launched working groups with participants from the carbon and blockchain industry.	Conduct/Governance Technical	Tokens; carbon credits; climate markets	Voluntary carbon offsets

ENTITY	GEOGRAPHY	PURPOSE	PROPOSED OUTCOME*	TOPIC**	INDUSTRY FOCUS
Verra	UNITED STATES	Verra develops and manages globally applicable standards for a sustainable future, to advance action and investment across several sectors related to social and environmental issues.Its Verified Carbon Standard (VCS) Program is the world's largest carbon crediting approach. Verra announced an intended approach to crypto instruments and tokens associated with carbon credits that have undergone verification through the VCS standard.	Conduct/Governance Technical	Tokens; carbon credits; climate markets	Carbon credit standards
World Intellectual Property Organization (WIPO) - Blockchain Taskforce	SWITZERLAND	The World Intellectual Property Organization (WIPO) promotes the protection of intellectual property throughout the world through cooperation among states and, where appropriate, in collaboration with any other international organization; and ensures administrative cooperation among unions. Its Blockchain Taskforce was established to explore blockchain uses in the IP ecosystem and propose a new WIPO standards on the use of IP data with blochchain technology.	Conduct/Governance	Intellectual property and data; cooperation among states, international organizations, and unions	Intellectual Property (IP)
World Wide Web Consortium (W3C) - Blockchain Community Group	N/A	The World Wide Web Consortium (W3C) is developing protocols and guidelines that ensure long-term growth for the web.It is an agreement amongst 4 host participants: MIT, INRIA (France), Keio University (Japan), and Beihang University (China) and its nearly 400 members. The initial blockchain workshop it hosted paved way for a number of collaborations including a GitHub repository for its Blockchain Community Group and other workshops. The W3C Blockchain Community Group is established to develop message format standards for blockchain based on ISO20022, as well as guidelines for the use of storage such as torrent, public blockchains, private blockchains, side chains, and CDN.The group also studies blockchain use cases and new technologies related to blockchain.	Conduct/Governance	Identity, Verifiable claims; storage; public and private blockchains; side chains; use cases; related technologies	Internet
Zhejiang Blockchain Standardization Technical Committee	CHINA	The Blockchain Standardization Technical Committee was initiated by the Economy and Information Technology Department of Zhejiang Province with committee members like Zhejiang University, Ant Financial and 8BTC. The Committee is working to promote the advancement of the blockchain industry by undertaking and developing blockchain standards for Zhejiang Province.	Technical Regulatory	dApps, digital identity	Blockchain standards in China

NEXT STEPS

Blockchain and DLT standards are still evolving from nascent stages to more formalized standards that are globally recognized and adhered to. With respect to areas of technical mapping identified in GSMI 2.0, progress has been made in topics including interoperability, Layer 2 protocols, DeFi protocols, and Decentralized Autonomous Organizations (DAOs), with the emergence of new standards bodies specializing in these topics, as well as focus groups within existing standards bodies. Progress is also underway with respect to audit, certification, security, and environmental impact metrics - especially the latter, as the green economy becomes an increasingly central issue for every facet of human activity. In fact, the role of blockchain and digital assets in providing the transparency and accountability needed for voluntary carbon markets has led two major carbon crediting bodies to release consultations and engage with the space. The outcome of those consultations and any standards they may entail, alongside broader standards developments in the space, will be discussed further in GSMI 4.0. There is still progress to be made in the space to address the fragmentation, comlexity, and inconsistent terminologies in order to foster adequate implementation of standards. In the meantime, the GSMI Technical Working Group continues to welcome suggestions for improvements and additions.

TAXONOMY

TECHNOLOGY TERMS

Term	Definition	Category	Source
Airdrop	An airdrop is the distribution of tokens without compensation (i.e. for free), generally undertaken with a view to increasing awareness of a new token.	Financial	OECD - Taxing Virtual Currencies
Application Programming Interface (API)	An API is a particular set of rules and specifications that software programs can follow to communicate with each other.	Technical	LiMSwiki
Banking Industry Architecture Network	Banking Industry Architecture network (BIAN) is a common architectural framework for enabling banking interoperability. It helps create standardized capabilities in banking to lower costs and increase innovation.	Financial	Red Hat - Modernizing Retail Banking with Blockchain
Block	Structured data composed of block data and a block header.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Block data	Structured data composed of zero or more transaction records or references to transaction records.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Block header	Structured data that includes a cryptographic link to the previous block unless there is no previous block.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Block reward	The reward given to miners or validators after a block is confirmed in a blockchain system	Technical	ISO 22739:2020 - Blockchain Vocabulary
Blockchain	A database that places records of transactions in blocks on a DLT network. Each block is linked (or "chained") to the previous block, using cryptographic signatures that make the transactions they contain immutable.	Technical	GBBC - GSMI 1.0
Burning	Burning is the act of sending cryptocurrency tokens to a wallet that has no access key.	Technical	Economic Times
CeFi	Centralized finance (CeFi) allows people to earn interest or get loans on their cryptocurrency by lending or borrowing it through a centralized corporation.	Technical	CryptoBriefing
Cloud Computing	The on-demand availability of computer system resources, especially data storage and computing power through the internet, typically made available by third-party service providers.	Technical	IMF - Digital Money Across Borders
Confirmed	Accepted by consensus for inclusion in a distributed ledger.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Confirmed block	Block that has been confirmed	Technical	ISO 22739:2020 - Blockchain Vocabulary
Confirmed transaction	A transaction that has been confirmed.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Consensus	An agreement between Distributed Ledger Technology (DLT) nodes that a transaction is validated, and that the ledger contains a consistent set and ordering of validated transactions. Different DLTs use different consensus mechanisms.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Consensus mechanism	Rules and procedures by which consensus is reached.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Cryptographic link	A link used in the block header to reference the previous block in order to create the append-only, sequential chain that forms a blockchain.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Cryptographic Trust	Trust bestowed in a set of machines that are operating a set of cryptographic algorithms to behave as expected. This form of trust is based on mathematics and computer hardware/software engineering.	Regulatory	Sovrin Glossary V3
Custody	Holding, directly or indirectly, client funds or securities, or having any authority to obtain possession of them. As it relates to cryptocurrency, custody commonly refers to holding a client's private keys.	Financial	SEC - Investor Bulletin: Custody of Your Investment Assets
Cryptography	Discipline that embodies the principles, means and methods for the transformation of data in order to hide their semantic content, prevent their unauthorized use, or prevent their undetected modification.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Decentralized application	An application that runs on a decentralized system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Decentralized Autonomous Organization (DAO)	A Decentralized Autonomous Organization (DAO) is an organization where the rules of operation and organizational logic are encoded as a smart contract on a blockchain.	Financial	Static1
Decentralized system	Distributed system wherein control of the system is distributed among the participating entities.	Technical	ISO 22739:2020 - Blockchain Vocabulary
DeFi	Decentralized finance ("DeFi") is a broad term for financial services that build on top of the decentralized foundations of blockchain technology.	Financial	WEF
Digital Signature	Data which, when appended to a digital object, enables the user of the digital object to authenticate its origin and integrity.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed Ledger Technology (DLT)	A system of electronic records that enables independent entities to establish a consensus around a shared ledger without relying on a central authority to provide or authenticate the authoritative version of the records. The consensus is established by the authoritative ordering of cryptographically validated ("signed") transactions made persistent by replicating the data across multiple nodes and tamper-free by linking them via cryptographic hashes. The shared result of the consensus process serves as the authoritative version of the records.	Technical	GBBC - GSMI 1.0
Distributed Ledger Technology Account	Representation of an entity participating in a transaction. Smart contracts, digital assets, and private keys can be associated with Distributed Ledger Technology Accounts.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed Ledger Technology Address	Value that identifies a DLT account participating in a transaction.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed Ledger Technology Network	Network of DLT nodes that make up a DLT system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed Ledger Technology Node	Distributed ledger technology device or process that participates in a network and stores a complete or partial replica of the ledger records.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed Ledger Technology Oracle	A service that provides a distributed ledger with external information. DLT Oracles are primarily used to provide smart contracts with information that is not available on the DLT system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Distributed System	System in which components located on networked computers communicate and coordinate their actions by interacting with each other.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Double spending	Failure of a DLT platform where the control of a token or crypto-asset is incorrectly transferred more than once, creating a situation of ambiguous ownership of the asset.	Technical	ISO 22739:2020 - Blockchain Vocabulary

Term	Definition	Category	Source
Electronic Health Record	An electronic health record (EHR) is a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorized users.	Healthcare	HealthIT
Encryption	Encoding message or data in such a way that only authorized parties can access it.	Technical	-1
End-to-end visibility	Having data available across the supply chain in real time to enable better decisions on risk management and performance improvement	Supply Chain	EY
Entity	Item inside or outside an information and communication technology system, such as a person, an organization, a device, a subsystem, or a group of such items that has recognizably distinct existence.	Technical	ISO 22739:2020 - Blockchain Vocabulary
ERC-20	The standard allows for the implementation of a standard API for tokens within smart contracts. This standard provides basic functionality to transfer tokens, as well as allowing tokens to be approved so they can be spent by another on-chain third party.	Technical	GBBC - GSMI 1.0
ERC-721	The standard allows for the implementation of a standard application programming interface (API) for non-fungible tokens (NFT) within smart contracts. This standard provides basic functionality to track and transfer NFTs.	Technical	GBBC - GSMI 1.0
Ethereum	Ethereum is an open-ended, decentralized, blockchain-based, public software platform that facilitates peer-to-peer contracts, known as Smart Contracts, as well as Decentralized Applications, known as DApps.	Technical	CME
Fault Tolerance	Ability of a functional unit to continue to perform required function in the presence of faults or errors.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Forging	This is often called staking and refers to the process through which transactions are verified when a DLT uses a 'proof of stake' mechanism	Financial	OECD - Taxing Virtual Currencies
Fungible Token	A token that is interchangeable with an identical token and divisible into smaller units.	Technical	ISSA Global Corporate Action Principles
Genesis Block	A genesis block has no previous block and serves to initialize the blockchain.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Governance	Governance refers to how a blockchain is initiated and managed. It defines the rules and procedures about network membership, management of permissions, transaction validity, issuance of new assets and their tokenization, dispute resolution, software updates, regulatory reporting, and protection against cyber risks.	Technical	OECD Ilibrary - The Potential for Blockchain Technology in Corporate Governance
Hard Fork	A hard fork is a software change to a DLT protocol that introduces a permanent split between the new protocol and the old protocol, making them incompatible ("backward incompatible").	Technical	ISSA - Crypto Assets: Moving from Theory to Practice
Hash Time-Locked Contract	A smart contract that enables the implementation of time-bound transactions.	Technical	World Bank Group - Blockchain Interoperability
Hash Value	String of bits which is the output of a cryptographic hash function.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Health record	The health record is the principal repository for data and information about healthcare services provided to an individual patient.	Healthcare	American Health Information Management Association
Healthtech	Healthtech is the application of organized knowledge and skills in the form of medicines, medical devices, vaccines, procedures and systems developed to solve a health problem and improve quality of life.	Healthcare	WHO - Health Technologies and Medicines
Hyperledger Fabric	Hyperledger Fabric, an open-source project from the Linux Foundation, is a modular blockchain framework, which is used as a foundation for developing enterprise-grade applications and industry solutions.	Technical	Circulor
Hyperledger Sawtooth	Hyperledger Sawtooth is an enterprise solution for building, deploying, and running distributed ledgers. It provides a modular and flexible platform for implementing transaction-based updates to shared state between untrusted parties coordinated by consensus algorithms.	Technical	Hyperledger Sawtooth
Immutability	A property wherein ledger records cannot be modified or removed once added to a distributed ledger.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Initial Coin Offering (ICO)	The cryptocurrency industry's equivalent to an initial public offering (IPO). A company looking to raise money to create a new coin, app, or service launches an ICO as a way to raise funds.	Financial	Investopedia - What is an ICO?
Internet of Things (IoT)	The Internet of things refers to a type of network to connect anything with the Internet based on stipulated protocols through information sensing equipment to conduct information exchange and communications in order to achieve smart recognitions, positioning, tracing, monitoring, and administration.	Technical	IJESC - Volume 6 Issue No. 5
Interoperability	Ability of two or more systems or applications to exchange information and to mutually use the information that has been exchanged.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Invoice Automation	A method of using automation software to extract invoice data, populate the information in an accounts payable system, and process invoice data for the accounts payable.	Supply Chain	Tipalti
Layer 1	Layer 1 is the underlying main architecture of a blockchain such as the already existing and functioning Bitcoin or Ethereum network.	Technical	Cryptoeq
Layer 2	Layer 2 refers to an overlaying network that is built on top of the underlying blockchain.	Technical	Cryptoeq
Ledger	Information store that keeps records of transactions that are intended to be final, definitive, and immutable.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Ledger record	Containing transaction records, hash values of transaction records, or references to transaction records recorded on a distributed ledger.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Liquidity Mining	Liquidity mining is a DeFi mechanism in which participants supply cryptocurrencies into liquidity pools, and are rewarded with fees and tokens based on their share of the total pool liquidity.	Financial	Defichain
Local payment	Local payment refers to a payment denominated in a single, specific currency exchanged by two banks/Payment Service Providers located within the same country.	Financial	UNECE - Blockchain in Trade Facilitation V2
Mainnet	Independent blockchain running its own network with its own technology and protocol.	Technical	Coinmarketcap
Master Patient Index	The Master Patient Index identifies patients across separate clinical, financial and administrative systems and is needed for information exchange to consolidate the patient list from the various RPMS databases.	Healthcare	Indian Health Service
Medicalchain	Medicalchain is a decentralized platform that enables secure, fast and transparent exchange and usage of medical data.	Healthcare	Medicalchain - Whitepaper
Miner	Miners are nodes in the network that ensure the transactions in the block are valid.	Technical	OECD - Blockchain Primer

Term	Definition	Category	Source
Mining	Activity, in some consensus mechanisms, that creates and validates blocks or validates ledger records. Participation in mining is often incentivized by block rewards and transaction fees	Technical	ISO 22739:2020 - Blockchain Vocabulary
Off-chain	Related to a blockchain system but located, performed, or run outside the blockchain system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Off-ledger	Related to a DLT system, but located, performed or run outside the DLT system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
On-chain	Located, performed, or run inside a blockchain system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
On-chain Governance	On-chain governance is a mechanism that enables a decentralized community to update a blockchain by voting directly on-chain.	Technical	Gemini - An Overview of Blockchain Governance
On-ledger	Located, performed, or run inside a DLT system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Open-source	Having the source code freely available for possible modification and redistribution.	Technical	Merriam-Webster
Orphan Blocks	Valid and verified blocks which have not been accepted into the blockchain network due to a time delay in the acceptance of the orphan block as opposed to another qualifying block.	Technical	Cryptoeq
Paper Wallet	A method of storing cryptocurrency where one writes or prints their wallet's private key and address on paper, which is its final security backup method.	Financial	Cryptoeq
Payment transaction	Payment transaction means an act of placing, transferring or withdrawing funds, initiated by the payer, or on his/her behalf, or by the payee, irrespective of any underlying obligations between the payer and the payee.	Financial	UNECE - Blockchain in Trade Facilitation V2
Permissioned	Requiring authorization to perform a particular activity or activities.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Permissionless	Not requiring authorization to perform any particular activity.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Pooled mining	Pooled mining pools all the resources of the clients to generate the solution to a given block. Therefore, rewards generated by that block's solution are split and distributed between the pool participants.	Financial	IMF
Private Distributed Ledger System	DLT system that is accessible for use only to a limited group of DLT users.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Private key	Part of an entity's asymmetric key pair, used for public key cryptography. A private key is used to generate a public key as well as sign off on blockchain transactions. Private keys are used in order to allow an entity to access their crypto assets, and should not be shared.	Technical	Original
Proof-of-Authority (PoA)	A type of consensus mechanism that gives certain nodes the exclusive right to create new blocks and secure the blockchain. The Proof-of-Authority mechanism is most commonly used for private blockchains.	Technical	Taxonomy of Blockchain Technologies
Proof-of-Burn (PoB)	A type of consensus mechanism in which miners must prove that they have 'burned' a digital asset through sending it to a verifiable and unspendable address. The Proof-of-Burn mechanism is commonly used to bootstrap a network.	Technical	Taxonomy of Blockchain Technologies
Proof-of-Capacity (PoC)	A consensus mechanism that focuses on the amount of memory the prover can employ to compute the proof. Miners who dedicate more disk space have a proportionally higher likelihood of mining a block and gaining the reward.	Technical	Taxonomy of Blockchain Technologies
Proof-of-Stake (PoS)	A consensus mechanism that selects 'provers' based on the amount of tokens that they own. The more tokens a 'prover' owns, the more likely they are to be chosen to verify the next block. Proof of stake assumes that users with a large share of the system wealth are more likely to provide accurate information.	Technical	Taxonomy of Blockchain Technologies
Proof-of-Work (PoW)	A consensus mechanism in which miners validate transactions through solving the inversion of a cryptographic function. The likelihood that a miner mines a new block is proportional to their contribution of computing power to that of the system's total computing power.	Technical	Taxonomy of Blockchain Technologies
Public key	Key of an entity's asymmetric key pair which can be made public.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Public-key Cryptography	Cryptography in which a public key and a corresponding private key are used for encryption and decryption, or are used for verifying digital signatures and digitally signing, respectively.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Record	Information created, received, and maintained as evidence and as an asset by an organization or person, in pursuit of legal obligations or in the transaction of business.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Regional payment	Regional payment is a payment denominated in a single, specific currency exchanged by two banks/Payment Service Providers located within a specific geographical area which includes different countries	Financial	UNECE - Blockchain in Trade Facilitation V2
RegTech	The use of technology to manage regulatory processes within the financial industry through technology. The main functions include regulatory monitoring, reporting, and compliance.	Regulatory	IMF - Digital Money Across Borders
Reward System (Incentive Mechanism)	Method of offering reward for some activities concerned with the operation of a DLT system. An example of a reward is a block reward.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Scalability	Scalability in regards to a blockchain protocol refers to its ability to support high transactional throughput and future growth.	Financial	Gemini - The Blockchain Trilemma
Segregated Witnesses (SeqWit)	The process to increase Bitcoin blockchain block size limit by removing signature date from transactions.	Technical	Cryptoeq
Settlement Finality	Settlement finality is defined as the point when the irrevocable and unconditional transfer of an asset occurs. Final settlement is a legally defined moment.	Financial	BIS - Payments without Borders
Sharding	A technique in distributed systems that horizontally partitions databases into rows, called shards. This is done to reduce the load on the blockchain network's participating nodes by eliminating the need for nodes to store every state or transaction, and instead only store a subset of every transaction.	Technical	Cryptoeq
Sidechain	Blockchain system that interoperates with a separate associated blockchain system to perform a specific function in relation to the associated blockchain system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Smart Contract	A computer program that is stored on a DLT) system, used to define and enforce a set of conditions. Smart contracts are typically used to execute agreements between two parties, without the involvement of an intermediary. Smart contracts sometimes use Oracles to utilize off-chain information.	Technical	ISSA - Crypto Assets: Moving from Theory to Practice
Soft Fork	A soft fork can be defined as a change to the DLT software that is backward compatible, which means that, unlike hard forks, there is no splitting or branching out of the blockchain	Technical	ISSA Global Corporate Action Principles

Term	Definition	Category	Source
Solo Mining	Solo mining is when a miner performs the mining operations individually. All mined blocks are generated to the miner's credit.	Financial	IMF - Treatment of Crypto Assets in Macroeconomic Statistics
Staking	Crypto staking is the process of locking up crypto holdings in order to obtain rewards or earn interest.	Technical	Sofi
Subchain	Logically separate chain that can form part of a blockchain system.	Technical	ISO 22739:2020 - Blockchain Vocabulary
SupTech	Supervisory technology (suptech) is the use of innovative technology by supervisory agencies to support supervision. It helps supervisory agencies to digitize reporting and regulatory processes, resulting in more efficient and proactive monitoring of risk and compliance at financial institutions.	Financial	BIS - FIS Insights onPolicy Implementation No. 9
Telehealth	Telehealth is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distance.	Healthcare	Medicaid.gov - Telemedicine
Testnet	Value-less networks used by protocol and smart contract developers to test their code in a production-like environment before deployment to the mainnet. Most testnets use a proof-of-authority consensus mechanism due to difficulty in incentivizing proof-of-work miners.	Technical	Ethereum.org - Docs
Timestamp	Time variant parameter which denotes a point in time with respect to a common time reference.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Validation	Function by which a transaction, ledger record or block is validated.	Technical	ISO 22739:2020 - Blockchain Vocabulary
Validator	Validators are the participants on the network who run nodes (called validator nodes) to propose and attest blocks on a PoS blockchain.	Technical	Consensys - What is Proof of Stake?
Virtual file System	The virtual file system is the software layer in the kernel that provides the filesystem interface to userspace programs.	Technical	Kernel - Overview of the Linux Virtual File System
Virtual Nodes	A virtual node represents access to an object within a virtual file system.	Technical	IBM - Understanding Virtual Nodes
Wallet	Application used to generate, manage, store or use private and public keys.	Technical	ISO 22739:2020 - Blockchain Vocabulary

TYPES OF ASSETS/FINANCIAL TERMS

Term	Definition	Category	Source
Account-based CBDC	A type of CBDC tied to an identification scheme, such that all users need to identify themselves to access it.	Financial	BIS Annual Economic Report 2021 III. CBDCs
Algorithmic Crypto Asset	A crypto asset that can be pegged to a price level or a unit maintained through buying, selling, or exchange among assets, or some other predetermined mechanism.	Financial	GFMA - Designing a Prudential Treatment for Crypto-Assets
Asset-backed tokens	Assets represented digitally on a distributed ledger	Technical	ISSA Global Corporate Action Principles
Bitcoin Futures	A contract or an agreement between two parties to purchase and sell BTC at a given price at a specific future date.	Financial	Phemex Academy
Bitcoin Options	Bitcoin options are the right, but not the obligation, to buy bitcoin at a future date at a predetermined price.	Financial	GBBC - GSMI 2.0
Bitcoin perpetual contracts	Bitcoin perpetual contracts are derivatives that, unlike futures or options, do not have an expiration or settlement date. It is a swap contract that is closely pegged to the underlying instrument and is marked-to-market via a "funding rate mechanism" (the relationship between the swap price, the underlying price, and funding rate is generally between -0.025% and 0.025%)	Financial	Phemex Academy

Term	Definition	Category	Source
Central Bank Digital Currency (CBDC)	A digital payment instrument and store of value issued by and as a liability of a jurisdiction's central bank or other monetary authority, and denominated in that jurisdiction's national unit of account.	Financial	r3 - CBDC Taxonomy and Design Choices
Convertible (or open) virtual currency	A currency that has an equivalent value in real currency and can be exchanged back-and-forth for real currency (ex: Bitcoin).	Financial	FATF- Virtual Currencies
Crypto Asset	Crypto assets are a type of private asset that depend primarily on cryptography and distributed ledger technology as part of their perceived or inherent value.	Financial	European Banking Authority
Cryptocurrencies	A crypto asset that is a digital representation of value with no redeeming rights against a central party. Cryptocurrencies may function within the community (enabled through peer-to-peer networks) of its users as a medium of exchange, unit of account or store of value. Cryptocurrencies may also act as an incentive mechanism and/or facilitate functions performed on the network they are created in; their value is driven by market supply/demand therein.	Financial	GBBC - GSMI 1.0
Cryptocurrency derivatives	A derivative for which the underlying asset or reference is a cryptocurrency.	Financial	GBBC - GSMI 2.0
Digital Asset	An asset in binary form that comes with a right to use, that has clearly defined notions of issuance, termination, ownership, and transfer of ownership, a definable monetary value, which may be between specific counterparties, and which may be based on a right to use, or may be based on the principle of limited supply. A digital asset is not necessarily analogous to a security.	Financial	GBBC - GSMI 1.0
Digital Financial Asset	A term used to distinguish financial assets in digital form from other assets, such as images, videos and texts that are also rendered in digital form.	Financial	ISSA Global Corporate Action Principles
Digital Native Tokens	A digital asset that is generated and governed by the protocol of a DLT system.	Technical	World Bank Document
Know Your Customer (KYC)	KYC is the practice carried out by companies to verify the identity of their clients in compliance with legal requirements and current laws and regulations.	Financial	Electronic Identification - What is KYC
Margin Trading	Borrowing money from a broker to buy a stock/crypto and using your investment as collateral. Investors generally use margin to increase their purchasing power so that they can own more stock/crypto without fully paying for it.	Financial	SEC - Margin: Borrowing Money to Pay for Stocks
Non-convertible (or closed) virtual currency	A currency that is intended to be specific to a particular virtual domain or world, such as a Massively Multiplayer Online Role-Playing Game (MMORPG) or Amazon.com, and under the rules governing its use, cannot be exchanged for fiat currency.	Financial	FATF- Virtual Currencies
Non-fungible Token (NFT)	A cryptographic asset on a blockchain with unique identification codes and metadata that distinguish it from others. Unlike cryptocurrencies, NFTs cannot be traded or exchanged at equivalency. NFTs are commonly used to record original work and ownership rights.	Technical	Investopedia
Privacy Coin	A token predicated on protecting user anonymity and limiting traceability of transactions.	Technical	Cryptoeq
Satoshi	A "satoshi" or " sat" refers to a single monetary unit of account on the Bitcoin blockchain (100,000, 000 satoshi =1 Bitcoin)	Financial	Cryptoeq
Security Token	Token issued solely on DLT that satisfies the applicable regulatory definition of a security or financial instrument under local law (e.g., World Bank's "Blockchain Bond").	Technical	GFMA - Designing a Prudential Treatment for Crypto-Assets

Term	Definition	Category	Source
Settlement Token	Representation on DLT of underlying traditional securities/financial instruments issued on a different platform (e.g., a traditional CSD, registrar, etc.) where such representation itself does not satisfy the definition of a security or financial instrument under local law and is used solely to transfer or record ownership or perform other mid/back-office functions (e.g. collateral transfer, recording of ownership)	Financial	GFMA - Designing a Prudential Treatment for Crypto-Assets
Stablecoins	A crypto asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets.	Financial	BCBS - Prudential treatment of cryptoasset exposures
Store of value	An asset, commodity, or currency that maintains its value.	Financial	Investopedia
Tokenized Commercial Bank Money	A digital form of money that represents a single fiat currency and is issued by/structured as a claim on a bank, credit institution or other similarly highly regulated depository institution.	Financial	GFMA - Designing a Prudential Treatment for Crypto-Assets
Utility Token	A means of accessing aDLT platform and/or a medium of exchange which participants on that platform may use for the provision of goods and services provided on that platform (e.g. loyalty rewards programs/systems, gift card rewards, credit points that are only usable within the DLT platform, memory and network server space, and other utilities based value)	Financial	GFMA - Designing a Prudential Treatment for Crypto-Assets
Virtual Currencies	Virtual currencies are "a digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value."	Financial	GBBC - GSMI 1.0
Wholesale CBDC	A CBDC for use by financial institutions (wholesale transactions) that is different from balances in traditional bank reserves or settlement accounts.	Financial	BIS Annual Economic Report 2021 III. CBDCs

ENVIRONMENTAL TERMS

Term	Definition	Category	Source
Carbon Border Adjustment Taxes	A carbon tax implemented on imported products in order to prevent "carbon leakage" as a result of climate action in the host country.	Supply Chain	European Commission - Carbon Border Adjustment Mechanism
Carbon Credit	One credit is equal to one ton of carbon emissions. The goal of carbon credits is to decrease carbon emissions from companies, by granting them a tradable credit. This incentivizes companies to cut down on emissions because they can gain monetary value from the credits they receive.	Sustainability	Investopedia
Carbon Emissions Token (CET)	A token representing a specified volume of metric tons of greenhouse gas emissions; distinguishes between the scope and category of emissions being reported.	Sustainability	VEM - Interwork Alliance
Carbon Offsetting	A quantifiable amount of carbon that can be traded, bought, or sold in order to reduce carbon emissions in the atmosphere.	Regulatory	Carbon Offset Guide - Understanding Carbon Offsets
Carbon Removal Unit Token	A non-fungible Token representing 1 mtCO2e removed from the atmosphere and stored. Shares the same Core Carbon Principles with attributes focusing on additionality, durability and reversal/replacements.	Sustainability	VEM - Interwork Alliance
Carbon Token	A carbon token is an asset-backed stable token with underlying carbon assets that have low price volatility and can be independently verified on international registries.	Supply Chain	Veridium - Unlocking the World's Environmental Asset Markets
Carbon Tracking	Enables organizations to dynamically track and calculate the GHG emissions footprint of their operations (scope 1 and scope 2) and supply chains (scope 3), providing accurate emissions insights based on the actual flow of materials.	Sustainability	Circulor
Conflict Minerals	Minerals trade used to finance armed groups, fuel forced labor and other human rights abuses, and support corruption and money laundering.	Sustainability	European Commission
Core Carbon Principles	A blueprint published by the Institute of International Finance that outlines criteria for utilizing and scaling voluntary carbon markets.	Regulatory	IIF - TSCVM Phase 2 Report, Page 13
Core Carbon Principles Token	A fungible token representing a specified volume of metric tons of greenhouse gas emissions reduced or removed by a project with standard data elements aligning with the TSVCM's Core Carbon Principles.	Sustainability	VEM - Interwork Alliance
Credit Buyer	As relates to ecological markets, an individual or organization that purchases verified credits issued by a Standard Registry.	Regulatory	VEM - Interwork Alliance
Ecological Claim Token	A token issued by a Modular Benefit Project containing co-benefits of the project (e.g. water conservation) and checkpoints, representing potions of a claim that build over time.	Regulatory	VEM - Interwork Alliance
Ecological Project/Program (EP)	A single source of truth to all participants regarding the identity of a project or program and its ecological benefit claims; contains key details that are important for the supplier, validation and verification body, standard registry, and buyer in the market. An EP can contain multiple Modular Benefit Projects.	Sustainability	VEM - Interwork Alliance
Environmental, Social, Governance (ESG) Scorecard	A simple scorecard for a participant to record their established pledge (net zero, net negative, etc.) and track progress (goals, forecast, actuals, effective). Commonly a report issued through an external auditor.	Sustainability	VEM - Interwork Alliance
ESG Certification	Performance evaluation based on ESG criteria and certifications under environmental, social and governance categories, leading to the issuance of an ESG certificate.	Sustainability	SGS ESG Certification
ESG Token	Enables a supplier to provide their customers with Environmental, Social and Corporate Governance data regarding individual products	Sustainability	SGS ESG Certification
Green Washing	The process of conveying a false impression or providing misleading information about how a company's products or operations are more environmentally sound.	Sustainability	Investopedia
Modular Benefit Project (MBP)	A data element contained in an Ecological Project/Program (EP); an EP can have multiple MBPs depending on what type of claim the project will be making (e.g. carbon removal, carbon reduction, etc.); used to issue specific types of Claim Tokens.	Sustainability	VEM - Interwork Alliance
Processed Claim Control	Once validated and verified it is a credible claim that has an associate credit and is returned or burned, requires Processed Id. Mint, Roles and Credible behaviors.	Regulatory	VEM - Interwork Alliance
Standard Registry	An organization that establishes science-based standards for measuring, reporting, and verifying (MRV) ecological benefit claims and issues value in the form of credit for claims that meet the standard set. A standard registry also certifies verifiers to collect and process claims based on the established standard.	Regulatory	VEM - Interwork Alliance
Supplier	A supplier performs the actions, in either an Ecological Project or Program (EP), for creating the asset value for use in the voluntary market and becomes the initial owner of the ecological benefit value generated. Includes owners, sponsors, and developers.	Supply Chain	VEM - Interwork Alliance
Taskforce on Scaling Voluntary Carbon Markets	An initiative that is focused on creating a voluntary carbon market that is consistent with the Paris Agreement.	Regulatory	TSVCM

Term	Definition	Category	Source
Validation and Verification Body (VVB)	An organization that is certified by a Standard Registry to verify MRV claims issued by an EP.	Regulatory	VEM - Interwork Alliance
Verification Contract	A multi-party contract between an Ecological Project (EP) and a Validation and Verification Body specifying the type of benefit being created; each Modular Benefit Project within an EP would have a separate Verification Contract.	Sustainability	VEM - Interwork Alliance

DIGITAL ID TERMS

Term	Definition	Category	Source
Accreditation Credential	A Credential issued by an Auditor Accreditor or Governance Authority asserting that a Trust Community Member conforms to the Accreditation requirements of a Governance Framework.	Regulatory	Sovrin Glossary V3
Cloud Agent	An Agent that is hosted in the cloud. It typically operates on a computing device over which the Identity Owner does not have direct physical control or access. Mutually exclusive with Edge Agent. A Cloud Agent requires a Wallet and typically has a Service Endpoint. Cloud agents may be hosted by an Agency.	Regulatory	Sovrin Glossary V3
Credential Registry	An Entity that serves as a Holder of Credentials issued by Trust Community Members in order to provide a cryptographically verifiable directory service to the Trust Community or to the public. The term also refers to the actual repository of Credentials maintained by this Entity. An informal Credential Registry may accept Credentials from participants whose purpose is to cross-certify each other's roles in the Trust Community.	Regulatory	Sovrin Glossary V3
Credential Registry Credential	A Credential issued by a Governance Authority asserting that a Credential Registry is authorized under a particular Governance Framework	Regulatory	Sovrin Glossary V3
Decentralized Identifier (DID)	A globally unique identifier developed specifically for decentralized systems as defined by the W3C DID specification. DIDs enable interoperable decentralized Self-Sovereign Identity management. A DID is associated with exactly one DID Document.	Regulatory	Sovrin Glossary V3
Edge Agent	An Agent that operates at the edge of the network on a local device, such as a smartphone, tablet, laptop, automotive computer, etc. The device owner usually has local access to the device and can exert control over its use and authorization. Mutually exclusive with Cloud Agent.	Regulatory	Sovrin Glossary V3
Edge-to-Edge Connection	A Connection that forms and/or communicates directly between two Edge Agents	Regulatory	Sovrin Glossary V3
Governance Authority (GA)	The Entity (typically an Organization) governing a particular Governance Framework.	Regulatory	Sovrin Glossary V3
Governance Authority Credential	A Credential issued by one Governance Authority asserting the recognition of another Governance Authority.	Regulatory	Sovrin Glossary V3
Identity	Information that enables a specific Entity to be distinguished from all others in a specific context. Identity may apply to any type of Entity, including Individuals, Organizations, and Things.	Regulatory	Sovrin Glossary V3
Identity Data	The set of data associated with an Identity that permits identification of the underlying Entity.	Regulatory	Sovrin Glossary V3
Legal Identity	A set of Attributes sufficient to identify an Identity Owner for the purpose of legal accountability in at least one Jurisdiction. A Legal Identity may be established by one or more valid Credentials from Issuers that are trusted to provide the necessary Attributes.	Regulatory	Sovrin Glossary V3

Term	Definition	Category	Source
Level of Assurance (LOA)	A measure—usually numeric—of the Trust Assurance that one Entity has in another Entity based on a defined set of criteria that establish the amount of reliance the first Entity may accept from the second Entity in the performance of the criteria. LOAs are often defined in or referenced by Governance Frameworks.	Regulatory	Sovrin Glossary V3
Microledger	A cryptographic data structure maintained over a single Connection that enables two or more Agents to securely share Pairwise Digital IDs, Public Keys, Service Endpoints, and other Identity Data.	Supply Chain	Sovrin Glossary V3
Prover	A role played by an Entity when it generates a Zero Knowledge Proof from a Credential. The Prover is also the Holder of the Credential.	Regulatory	Sovrin Glossary V3
Self-sovereign Identity	An identity system architecture based on the core principle that identify owners have the right to permanently control one or more identifiers together with the usage of the associated identity data.	Healthcare	Sovrin Glossary V3
Trust Community	A set of Entities cooperating to achieve their mutual trust objectives. An informal Trust Community may not have an official structure or a Governance Framework. A formal Trust Community consists of the set of all Entities participating in a Governance Framework	Regulatory	Sovrin Glossary V3

SUPPLY CHAIN TERMS

Term	Definition	Category	Source
Anomalies	A discrepancy highlighted in the supply chain that could potentially highlight an issue (e.g. an event that has happened in an unknown location, a mass balance ratio discrepancy between points in a supply chain).	Supply Chain	Circulor
Asset	An asset is a physical item that is being tracked through the chain of custody. An asset is identified by a QR Code, barcode, NFC tag, etc.	Supply Chain	Circulor
Chain-of-custody	A process that tracks the movement of evidence through its collection, safeguarding, and analysis lifecycle by documenting each person who handled the evidence, the date/time it was collected or transferred, the GPS location the action occurred, and the purpose for the transfer.	Supply Chain	NIST - Computer Security Resource Center
Circulor Lockbox™	Used in the Circulor platform, with permission, to allow Organisations access to records within their supply chain that they do not own.	Supply Chain	Circulor
Circulor Protocol™	The proprietary Circulor Protocol, embedded within the Circulor platform, verifies data entered onto the system and enforces common rules on all ecosystem participants.	Supply Chain	Circulor
Events	An event is an action that occurs on an Asset being tracked in the supply chain, and forms the chain of custody of a given Asset.	Supply Chain	Circulor
First Mile	The starting point in a supply chain	Supply Chain	Circulor
Inherited Emissions	The amount of emissions that are inherited by downstream suppliers in the supply chain.	Supply Chain	Circulor
Privacy Protection Policy	A statement or legal document that discloses some or all of the ways a party gathers, uses, discloses, and manages a customer or client's data.	Supply Chain	Circulor
Traceability	The proof of traceability and provenance of an Asset that is being tracked through a Supply Chain.	Supply Chain	Circulor